HCD-H650/H650M

SERVICE MANUAL

AEP Model
E Model
Australian Model
HCD-H650

Canadian Model
AEP Model
UK Model
HCD-H650M

- HCD-H650 is the tuner, deck, CD and amplifier section in FH-650/B711.
- HCD-H650M is the tuner, deck, CD and amplifier section in MHC-650.

Photo : HCD-H650 E model

CD Section	Model Name Using Similar Mechanism		NEW
	CD Mechanism Type		CDM28-5BD15A
	Base Unit Name		BU-5BD15A
Tape deck Section	Model Name Using Similar Mechanism		HCD-H61/H61M
	Tape Transport Mechanism Type	DECK A	TCM-190RA12AL
		DECK B	TCM-190RB53A

SPECIFICATIONS

CD player section

System — Compact disc digital audio system
Laser — Semiconductor laser
Wavelength — 780 – 790 nm

Tuner section

FM stereo, FM/AM superheterodyne tuner

FM tuner section

Tuning range — 87.5 -108.0 MHz (50 kHz step for except Canadian, East European model) (100kHz step for Canadian model)
FM1 : 65 - 74MHz
FM2 : 87.5 - 108MHz
(East European model)
Aerial — FM lead antenna (HCD-650M)
FM telescopic aerial (HCD-650)
Aerial terminals
75 ohm unbalanced
Intermediate frequency
10.7 MHz

AM tuner section

AEP, UK, East European, German model :
Tuning range
MW: 531 - 1,602 kHz
LW: 153 - 279 kHz
Canadian model : AM: 530 -1,710 kHz
(10 kHz Step)
531 - 1,710 kHz
(9kHz Step)
Italian model : MW : 522 - 1611kHz (9kHz step)
LW : 153 - 279kHz
Australian, MX, E, Saudi Arabia, Malaysia, Singapore model :
MW: 531 - 1,602 kHz
(9 kHz step)
530 - 1710 kHz
(10 kHz step)
SW: 5.95 - 17,9MHz

Aerial — AM loop aerial
External aerial terminals
Intermediate frequency
450 kHz

Cassette deck section

Recording system
4-track 2-channel stereo
Frequency response
(DOLBY NR OFF)
60 – 13,000 Hz (±3 dB), using TYPE I cassette (Sony HF-S)
60 – 14,000 Hz (±3 dB), using TYPE II cassette(Sony UX-S)
Wow and flutter
0.1% WRMS +0.3% (DIN)

Amplifier section

For UK, AEP model :
Continuous RMS power output:
35+35 watts (6 ohms at 1 kHz, DIN)
40+40 watts (6 ohms at 1 kHz, 5% THD)
Music power output:
80+80 watts (6 ohms at 1 kHz)
For Canadian model :
Continuous RMS power output:
40+40 watts (6 ohms at 1 kHz, 5%)
For Singapore, E, Saudi Arabia, Malaysia, Australian, MX model :
Coutionuous RMS Power output:
40+40 watts (6 ohms at 1 kHz, 5% THD)
Peak music power output:
500 watts (4 speakers driven)
Inputs
MIX MIC (mini jack):
for Canadian, Australian, E, Saudi Arabia, MX, Malaysia, Singapore model :
Sensitivity 1 mV, impedance 600 ohms
MD/AUX (phono jack):
for Canadian, Australian, E, Saudi Arabia, MX, Malaysia, Singapore model :
Sensitivity 450 mV, impedance 47 kilohms

— Continued on page 2 —

MICROFILM

COMPACT DISC DECK RECEIVER

SONY®

MD/PHONO :(MD Position)
For UK, AEP, G, IT, EE model :
Sensitivity 5 mV
MD/PHONO :(Phono Position)
for AEP, UK, German, Italian, East European model :
Sensitivity 250mV,
impedance 47 kilohms

Outputs
HEADPHONES (stereo mini jack): accept headphones of 8 ohms or more.
SPEAKER: accept impedance of 6 to 16 ohms.
SURROUND SPEAKER:
For E, Australian, Saudi Arabia, Malaysia, MX model :
accept impedance of 8 to 16 ohms.
Singapore model :16 Ωs.

Speaker section

Speaker system
3-way system
Speaker units Woofer: 13 cm dia., cone type
Tweeter: 5 cm dia., cone type
Super tweeter: 2 cm dia., dome type
Enclosure Bass reflex
Frequency range
65 Hz - 20 kHz
Sensitivity 88 dB/W/m
Rated impedance
6 ohms
Dimensions Approx. 175 x 285 x 235 mm (w/h/d) (7 x 11 1/4 x 9 3/8 inches)
Mass Approx. 2.8 kg net per speaker (6 lb. 2.8 oz.)

General

Destination	Power requirements	Power consumption
Canadian model	120V AC, 50Hz	120W
Australian model	220 – 240V AC, 50Hz	150W
AEP, German, Italian, East European model	220 – 230V AC, 50/60Hz	120W
UK model	240V AC, 50Hz	120W
E, Saudi Arabia, MX, Malaysia, Singapore model	110 – 120V/220V – 240V AC, 50/60Hz Adjustable with the Voltage Selector	150W

Dimensions Approx. 225 x 285 x 275 mm (w/h/d) (8 7/8 x 11 1/4 x 10 7/8 inches) incl. projecting parts and controls
Mass Approx. 6.5 kg (14 lb. 50 oz.)

Design and specifications are subject to change without notice.

Note
This appliance conforms with EEC Directive 87/308/EEC regarding interference suppression.

Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"DOLBY" and the double-D symbol DD are trademarks of Dolby Laboratories Licensing Corporation.

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SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

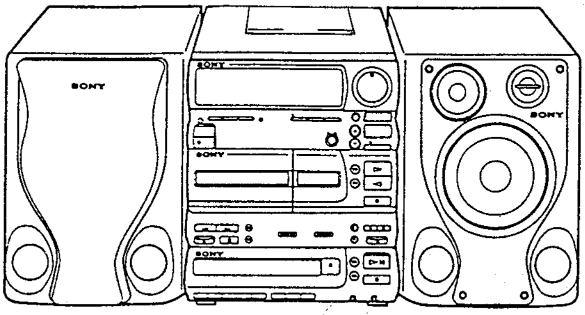
FH- /MHC-650

SERVICE MANUAL

AEP Model
FH-B650 :

E Model
Australian Model
FH-B711 :

Canadian Model
AEP Model
UK Model
MHC-650 :



- The FH-B650/B711 and MHC-650 are composed of the models below. Service manuals are issued for each of the component models, so please refer to each of the manuals.

COMPONENTS MODEL

SET	TUNER, DECK, CD, PLAYER, AMP	SPEAKER	REMOTE COMMANDER
FH-B650 (AEP, AED, G, MX)	HCD-H650	SS-H650	RM-S755
FH-B711 (E, EA, AUS, MY, SP)			
MHC-650 (CND, AEP, UK, AED, EE, IT)	HCD-H650M		

• AUS	: Australian	• AED	: German Norway Sweden Finland Denmark
CND	: Canadian		
EA	: Saudi Arabia		
EE	: East European		
G	: German		
IT	: Italian		
MX	: Mexican		
MY	: Malaysia		
SP	: Singapore		

SPECIFICATIONS

Destination	Power requirements	Power consumption
Canadian model	120V AC, 50Hz	120W
Australian model	220 – 240V AC, 50Hz	150W
AEP, German, Italian, East European model	220 – 230V AC, 50/60Hz	120W
UK model	240V AC, 50Hz	120W
E, Saudi Arabia, Malaysia, Singapore, Mexican model	110 – 120V/220V – 240V AC, 50/60Hz Adjustable with the Voltage Selector	150W

Dimensions	Approx. 225 × 285 × 275 mm (w/h/d) (8 7/8 × 11 1/4 × 10 7/8 inches) incl. projecting parts and controls
Mass	Approx. 6.5kg (14 lb. 50 oz.)

Design and specifications are subject to change without notice.

MINI HI-FI COMPONENT SYSTEM

SONY®

MICROFILM

2. PARTS LIST

NOTE :

- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

• AED : German
Norway
Sweden
Finland
Denmark

Ref. No.	Part No.	Description	Remark
	1-467-461-11	REMOTE COMMANDER(RM-S755)	
	1-501-594-21	ANTENNA(FM)(MCH-650)	
	1-751-623-11	CORD, SPEAKER(MHC-650)	
	2-181-754-21	COVER, BATTERY	
	3-758-277-11	MANUAL, INSTRUCTION(ENGLISH)	(Australian, Canadian, UK)
	3-758-277-41	MANUAL, INSTRUCTION (FRENCH/SPANISH/PORTUGUESE/DUTCH)	(AEP)
	3-758-277-51	MANUAL, INSTRUCTION(GERMAN)	(German)
	3-758-277-61	MANUAL, INSTRUCTION(ITALIAN)	(AEP, Italian)
	3-758-277-71	MANUAL, INSTRUCTION (ENGLISH/GERMAN)	(AEP, East European)
	3-758-277-81	MANUAL, INSTRUCTION(POLISH/RUSSIAN)	(East European)
	3-758-277-91	MANUAL, INSTRUCTION (DANISH/FINISH/SWEDISH)	(AED)
	3-758-278-41	MANUAL, INSTRUCTION(FRENCH)	(E, Saudi Arabia, Malaysia, Canadian)
	3-758-278-51	MANUAL, INSTRUCTION (ENGLISH/SPANISH/CHINES)	(E, Saudi Arabia, Malaysia, Mexcian, Singapore)
	3-758-278-71	MANUAL, INSTRUCTION(ARABIC)	(E, Saudi Arabia)
*	4-965-156-01	INDIVIDUAL CARTON	(E, Malaysia, Mexcian, Singapore)
*	4-965-157-01	INDIVIDUAL CARTON(Saudi Arabia)	
*	4-965-158-01	INDIVIDUAL CARTON(Australian)	
*	4-965-159-01	INDIVIDUAL CARTON(FH-B650:AEP, German, AED)	
*	4-965-160-01	INDIVIDUAL CARTON (MCH-650:AEP, Italian, UK, AED, German)	
*	4-965-161-01	INDIVIDUAL CARTON(East European)	
*	4-965-162-01	INDIVIDUAL CARTON(Canadian)	

Sony Corporation
Audio Group

English
94A0280-1
Printed in Japan

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Published by Audio Sector Quality Assurance Dept.

SECTION 1
GENERAL

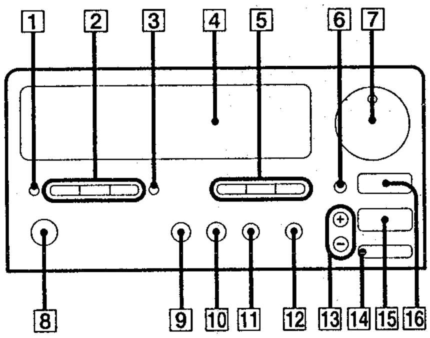
This section is extracted from HCD-H650 (E, Australian, Saudi Arabia, MX, Malaysia, Singapore Model) instruction manual.

LOCATION AND FUNCTION OF CONTROLS

- AUS : Australian
  G : German
  IT : Italian
  MX : Mexican
  EA : Saudi Arabia
  EE : Easc European
  MY : Malaysia
  SP : Singapore

Front Panel

Tuner/Amplifier

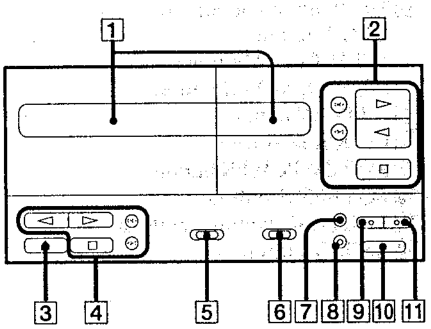


1 Remote sensor
2 TIMER SET button
DAILY button
REC TIMER button
3 CLOCK SET button
4 Display window
5 KARAOKE PON button
EFFECT button
EQ PRESET button
6 MEMORY/NEXT button
7 VOLUME control
8 SYSTEM POWER ON/STANDBY switch
9 MIC LEVEL control
10 DIGITAL ECHO control
11 MULTIPLEX button

E, AUS, EA, MX, MY, SP model

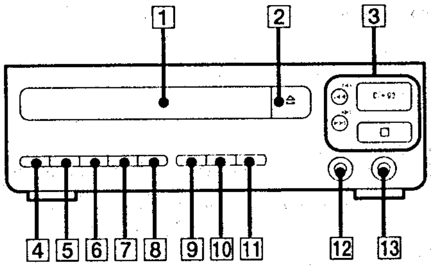
12 DBFB button
13 TUNER/TIMER (+/-) button
14 PRESET/TUNING buttons
15 TUNER/BAND button
16 FUNCTION button

Tape player



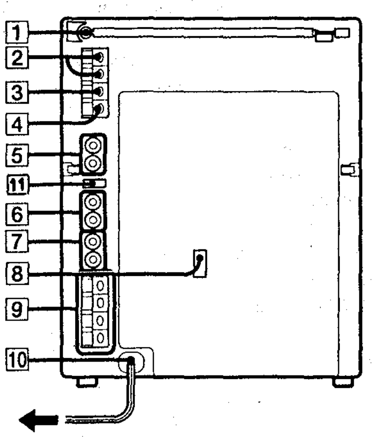
1 Tape compartments
2 Tape operating buttons and lamp (for deck B)
3 ≜ button (for deck A)
4 Tape operating buttons and lamp (for deck A)
5 DIRECTION switch
6 DOLBY NR switch
7 ▯▯ PAUSE button
8 ● REC button
9 HIGH SPEED DUBBING button
10 ≜ button (for deck B)
11 CD SYNCHRO button

CD player



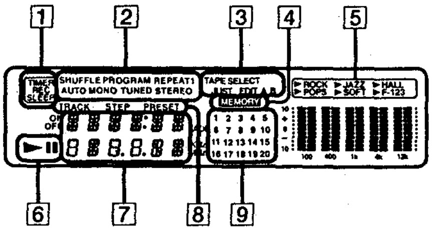
1 CD tray
2 ≜ OPEN/CLOSE button
3 CD player operating buttons
4 CONTINUE button
5 SHUFFLE button
6 PROGRAM button
7 REPEAT button
8 TIME button
9 CHECK button
10 CLEAR button
11 EDIT button
12 MIX MIC jack
13 HEADPHONES jack

Rear Panel


1
2
3
4
5
11
6
7
8
9
10

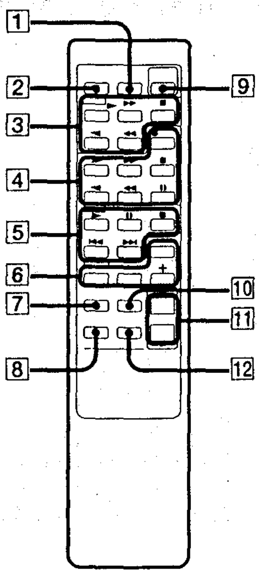
1 FM telescopic aerial (H650 ONLY)
2 FM 75Ω terminals
3 ⏚ earth terminal
4 AM terminal
5 MD/PHONO jacks (AEP, UK, G, IT, EE model)
MD/AUX jacks (Canadian, E, EA, AUS, MX, MY, SP model)
6 LINE OUT jack
7 SURROUND SPEAKER jack (E, AUS, EA, MY, SP, MX, model)
8 VOLTAGE selector (except for Mexican models) (E, EA, MX, MY, SP model)
9 SPEAKER connector
10 AC power cord
11 MD/PHONO Selector

Display Window


1
2
3
4
5
TIMER
REC
SLEEP
SHUFFLE PROGRAM REPEAT1
AUTO MONO TUNED STEREO
TAPE SELECT
JUST EDIT A B
MEMORY
▶ROCK ▶JAZZ ▶HALL
▶POPS ▶SOFT ▶F-123
TRACK STEP PRESET
ON
OFF
▶II
1 2 3 4 5
6 7 8 9 10
11 12 13 14 15
16 17 18 19 20
100 400 1k 4k 12k
6
7
8
9

1 Timer indications
2 CD play and Tuner indication
3 CD recording indication
4 MEMORY indication
5 Audio emphasis indication
6 CD play and pause indication
7 Time/frequency indication
8 TRACK/STEP/PRESET indication
9 Music calendar/preset radio station numbers

Remote commander

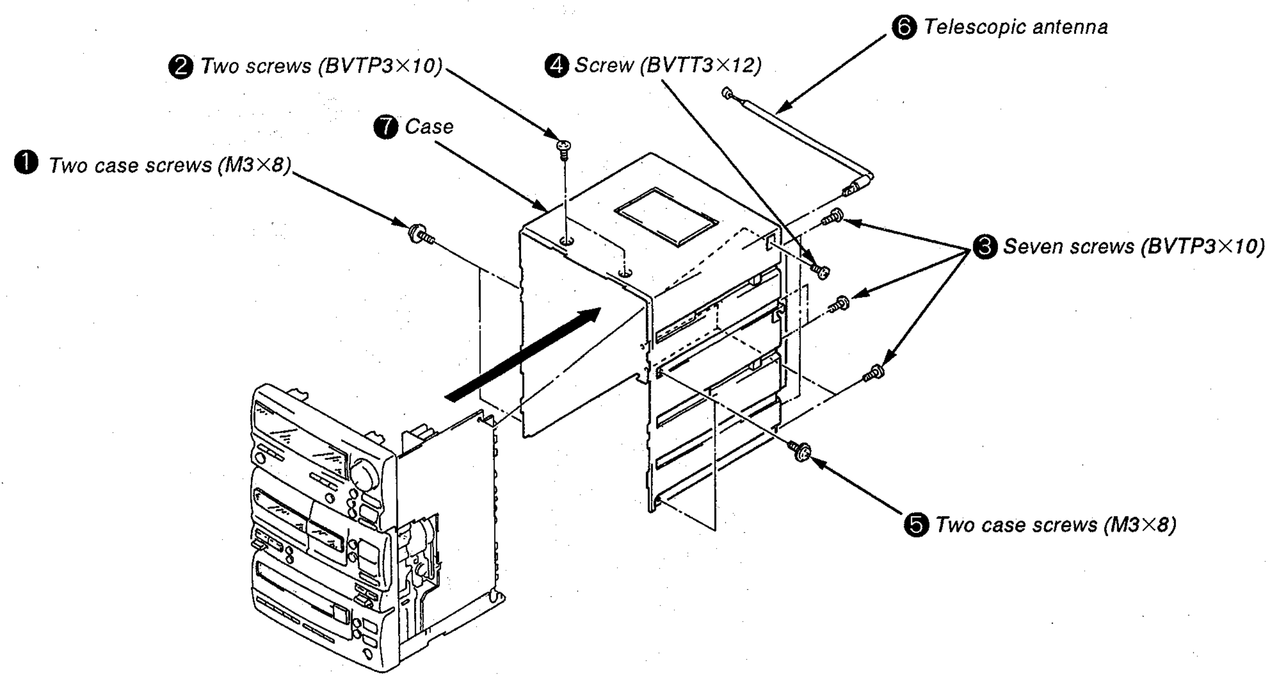

1
2
3
4
5
6
7
8
9
10
11
12

1 SLEEP button
2 FUNCTION button
3 Deck A operating buttons
▶ (front side play)
◀ (reverse side play)
▶▶ (fast rightward)
◀◀ (fast leftward)
■ (stop)
4 Deck B operating buttons
▶ (front side play)
◀ (reverse side play)
▶▶ (fast rightward)
◀◀ (fast leftward)
II (pause)
■ (stop)
● REC (recording)
5 CD operating buttons
▶ (play)
|◀◀/▶▶| AMS*
II (pause)
■ (stop)
* AMS: Automatic Music Sensor.
6 Tuner operating buttons
BAND button
PRESET (+/–) buttons
STEREO/MONO button
7 DISPLAY button
8 CLOCK DISPLAY
9 SYSTEM POWER button
10 EQ PRESET button
11 VOL (+/–) (volume) buttons
12 EFFECT button

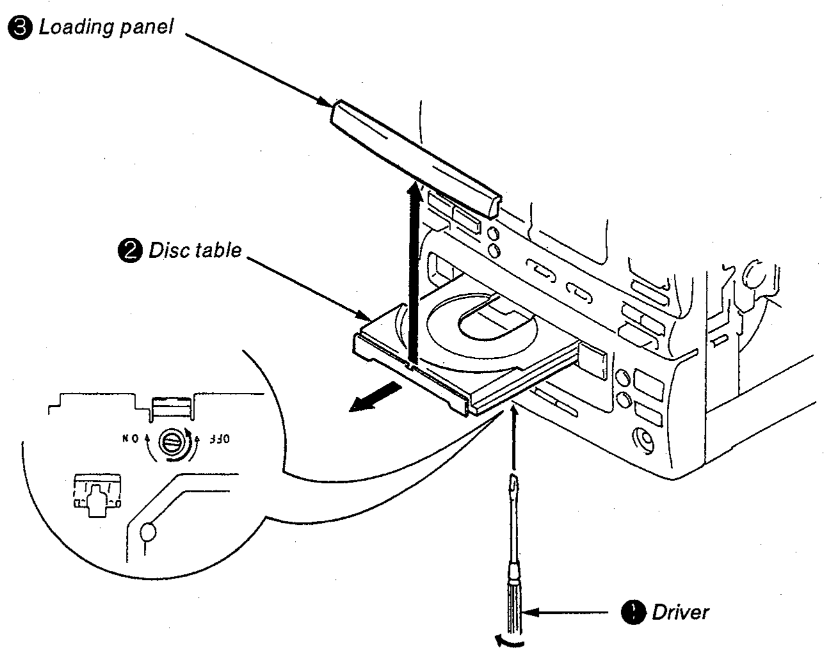
SECTION 2
DISASSEMBLY

Note : Follow the disassembly procedure in the numerical order given.

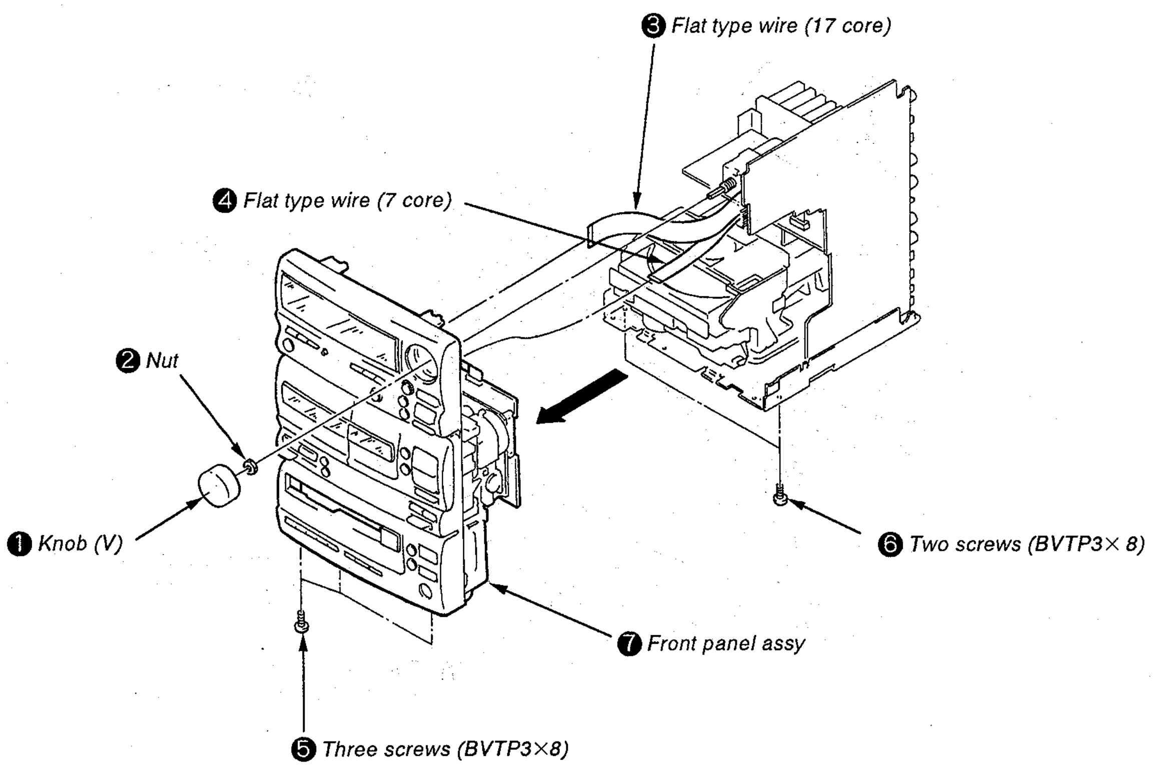
2-1. CASE REMOVAL


❻ Telescopic antenna
❷ Two screws (BVTP3×10)
❹ Screw (BVTT3×12)
❼ Case
❶ Two case screws (M3×8)
❸ Seven screws (BVTP3×10)
❺ Two case screws (M3×8)

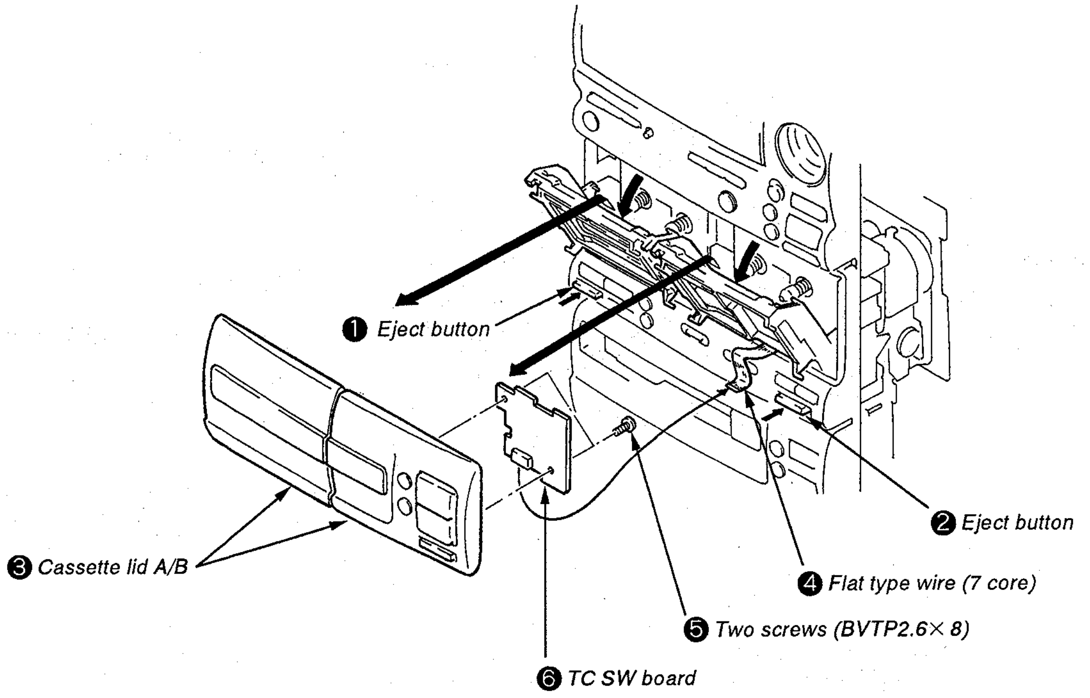
2-2. LOADING PANEL REMOVAL


❸ Loading panel
❷ Disc table
❶ Driver

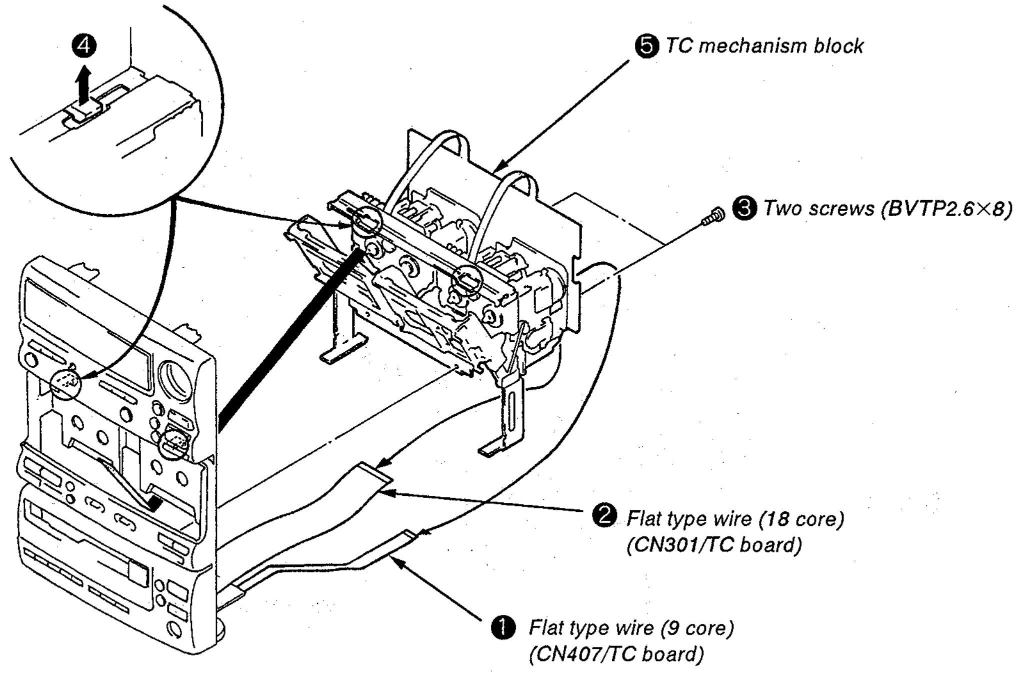
2-3. FRONT PANEL REMOVAL


❸ Flat type wire (17 core)
❹ Flat type wire (7 core)
❷ Nut
❶ Knob (V)
❻ Two screws (BVTP3× 8)
❼ Front panel assy
❺ Three screws (BVTP3×8)

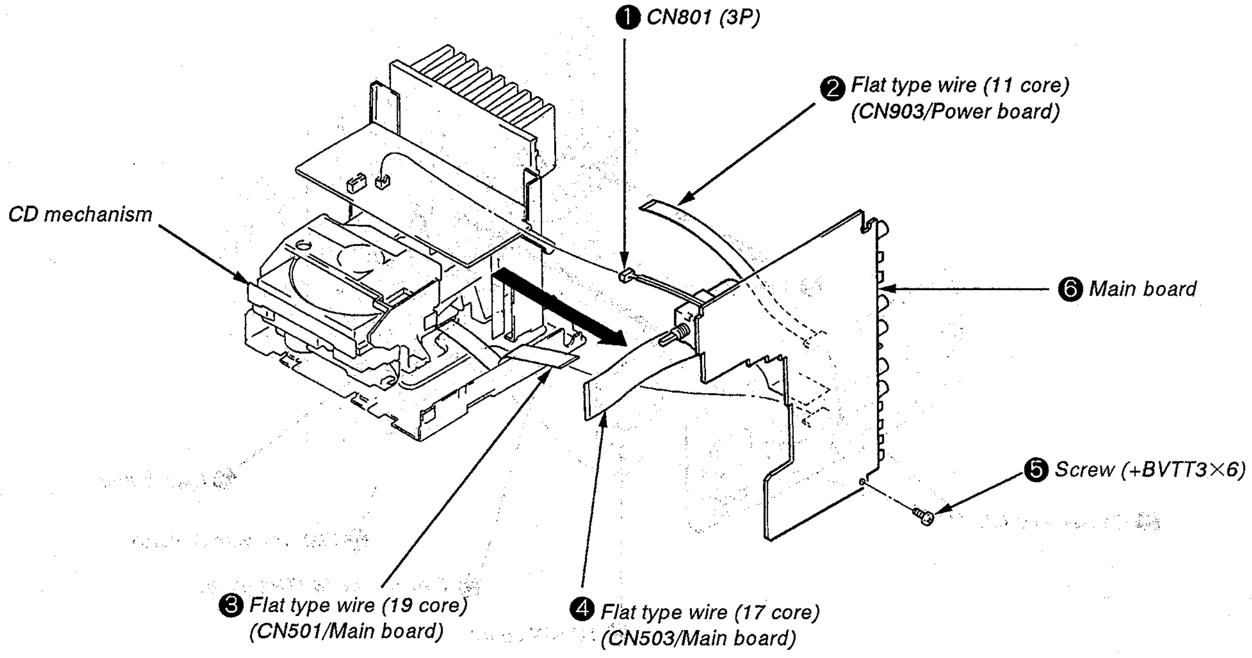
2-4. CASSETTE LID REMOVAL


❶ Eject button
❷ Eject button
❸ Cassette lid A/B
❹ Flat type wire (7 core)
❺ Two screws (BVTP2.6× 8)
❻ TC SW board

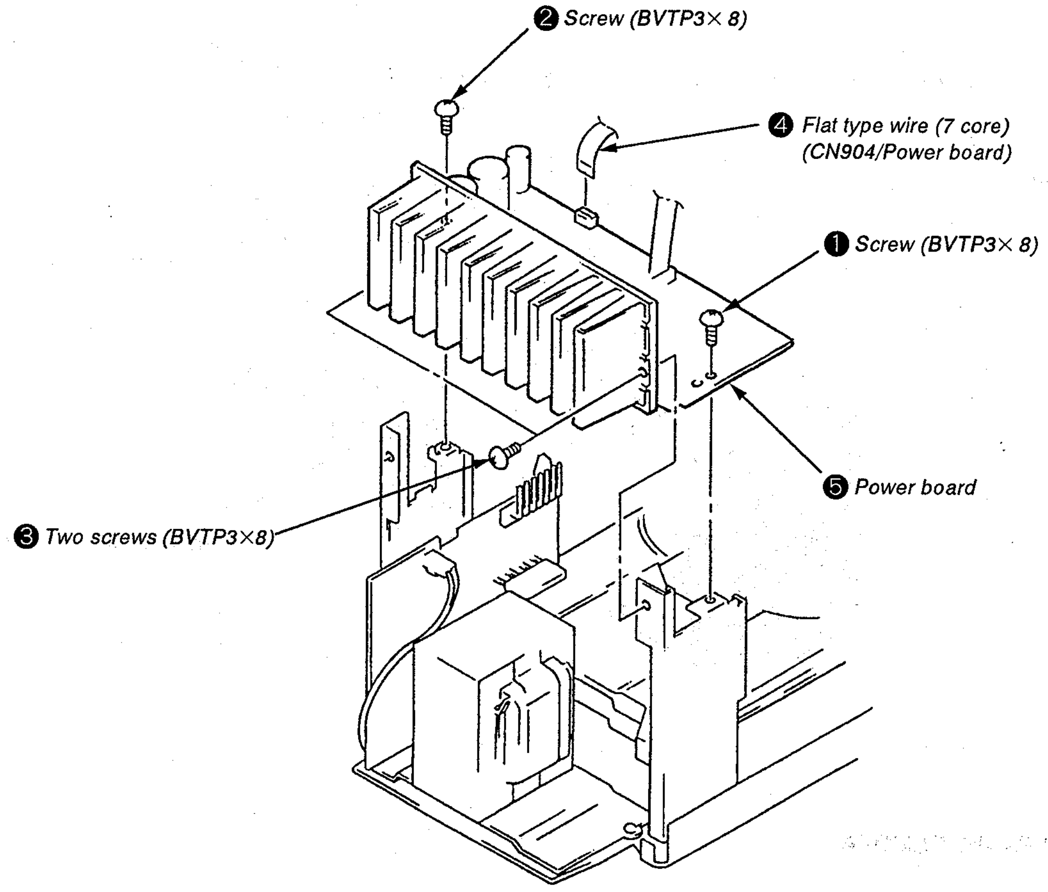
2-5. TC MECHANISM BLOCK REMOVAL


④
⑤ TC mechanism block
③ Two screws (BVTP2.6×8)
② Flat type wire (18 core)
(CN301/TC board)
① Flat type wire (9 core)
(CN407/TC board)

2-6. MAIN BOARD REMOVAL


① CN801 (3P)
② Flat type wire (11 core)
(CN903/Power board)
CD mechanism
⑥ Main board
⑤ Screw (+BVTT3×6)
③ Flat type wire (19 core)
(CN501/Main board)
④ Flat type wire (17 core)
(CN503/Main board)

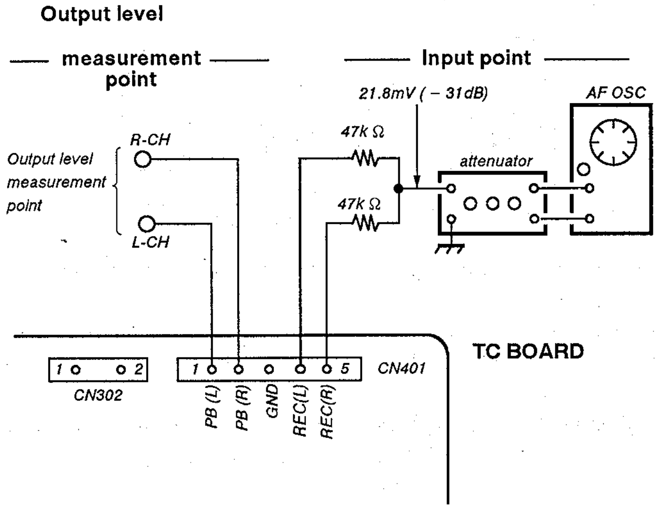
2-7. POWER BOARD REMOVAL


② Screw (BVTP3× 8)
④ Flat type wire (7 core)
(CN904/Power board)
① Screw (BVTP3× 8)
⑤ Power board
③ Two screws (BVTP3×8)

SECTION 3
ELECTRICAL ADJUSTMENTS

DECK SECTION

1. The adjustment should be performed in the publication.
   (Be sure to make playback adjustment at first.)
2. The adjustment and measurement should be performed for both L-CH and R-CH.
   - Switch positon
     DOLBY NR switch : OFF
     FUNCTION button : CD
3. Perior to electrical adjustments, short the connector CN401 (test mode).
4. Input point and output level measurement point.


Output level
measurement point
Input point
21.8mV (– 31dB)
AF OSC
R-CH
47k Ω
Output level measurement point
attenuator
47k Ω
L-CH
TC BOARD
1 2
CN302
1 5
CN401
PB (L)
PB (R)
GND
REC(L)
REC(R)

- **Test Tape**

Tape	Contents	Use
P-4-A100	10kHz, – 10dB	Head Azimuth Adjustment
P-4-L300	315Hz, 0dB	Level Adjustment
WS-48B	3kHz, 0dB	Tape Speed Adjustment

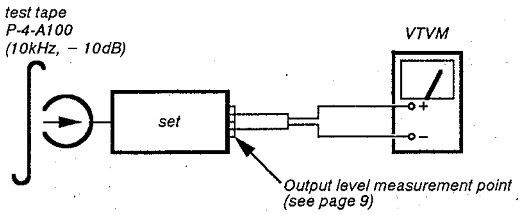
0 dB=0.775V

Record/Playback Head Azimuth Adjustment

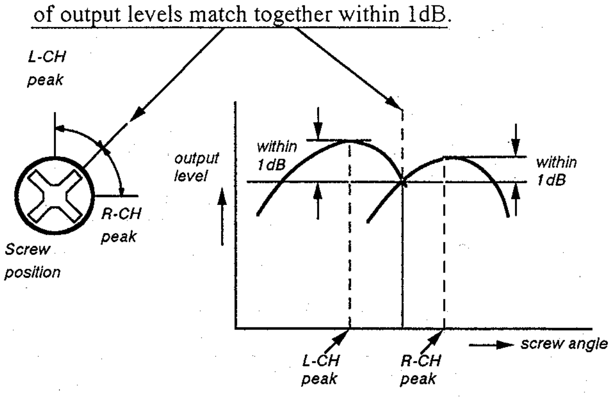
DECK A **DECD B**

Procedure :

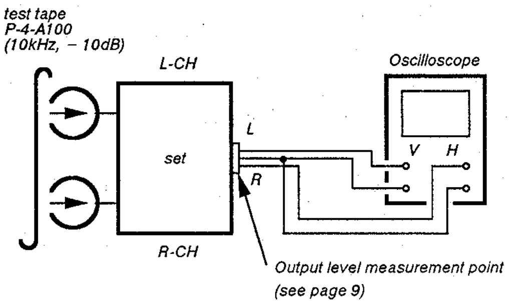
1. Forward Playback mode
   Reverse Playback mode

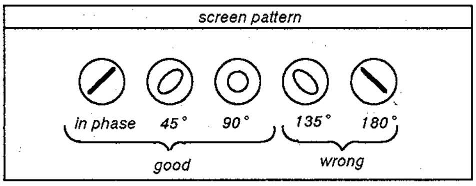

test tape
P-4-A100
(10kHz, – 10dB)
set
VTVM
+
–
Output level measurement point
(see page 9)

2. Turn the adjustment screw for the maximum output levels.If these levels do not match,turn the adjustment screw until both of output levels match together within 1dB.


L-CH
peak
R-CH
peak
Screw
position
output
level
within
1dB
within
1dB
L-CH
peak
R-CH
peak
screw angle

3. Playback Mode

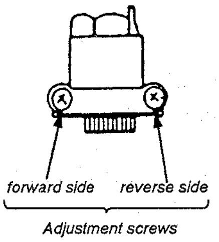

test tape
P-4-A100
(10kHz, – 10dB)
L-CH
Oscilloscope
set
L
R
V
H
R-CH
Output level measurement point
(see page 9)

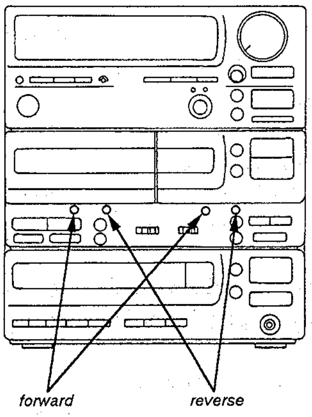

screen pattern
in phase
45°
90°
135°
180°
good
wrong

4. Change the review playback mode and repeat the steps 1 to 3.
5. After the adjustment, lock the adjustment screw with suitable locking compound.

Adjustment Location :

– record/playback head (Deck A and B)


forward side
reverse side
Adjustment screws

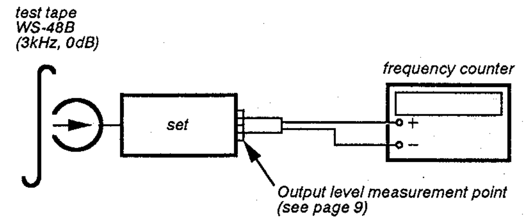

forward
reverse

Tape Speed Adjustment DECK A DECK B

Procedure :

- Perform high speed adjustment before normal speed adjustment.

  Mode : Playback


test tape
WS-48B
(3kHz, 0dB)
set
frequency counter
+
−
Output level measurement point
(see page 9)

Speed	Deck	Adjustment	Frequency counter
※ High	A	RV72	5,970 to 6,030Hz
	B	RV72	
Normal	A	RV71	2,985 to 3,015Hz
	B	RV71	

∗ Continue to press HIGH SPEED DUBBING switch (S3019) in playback mode : High speed playback.

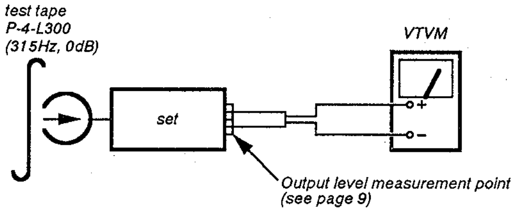
Frequency difference between the begining and the end of the tape should be within ± 3%.
Frequency difference between deck A and deck B the biginning of the tape should be within 1.5%.

Adjustment Location : MD (AX) and MD (BX) boards.
(see page 11)

Playback Level Adjustment DECK A DECK B

Procedure :

Mode : Playback


test tape
P-4-L300
(315Hz, 0dB)
set
VTVM
+
−
Output level measurement point
(see page 9)

Deck A is RV11(L-CH)and RV21(R-CH), deck B is RV11(L-CH) and RV21(R-CH) so that adjustment within adjustment level as follows.

Adjustment Level :
LINE OUT level: − 7.5 ± 0.5dB (0.31 to 0.35V)
Level Difference between Channels : within 0.5dB

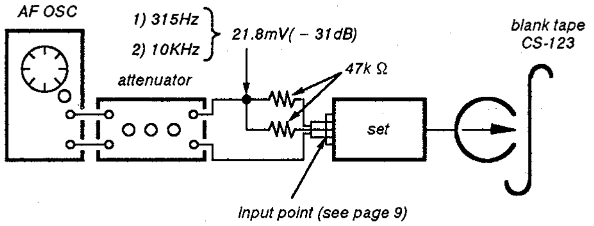
Confirm the DOLBY OUT level does not change in playback mode while changing the mode from playback to stop several times.

Adjustment Location : MD (AX) and MD (BX) boards
(see page 11)

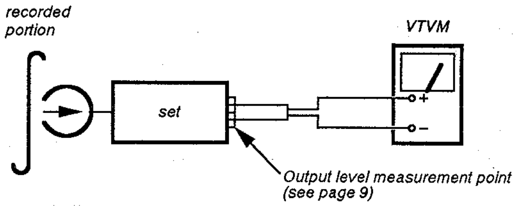
Record Bias Adjustment DECK B

Procedure :

1. Record mode


AF OSC
1) 315Hz
2) 10KHz
21.8mV(− 31dB)
attenuator
47k Ω
set
blank tape
CS-123
input point (see page 9)

2. Playback mode


recorded
portion
set
VTVM
+
−
Output level measurement point
(see page 9)

Confirm playback the signal recorded in step 1 become adjustment level as follows.
If these levels do not adjustment level, adjustment the RV12 (L-CH) and RV22 (R-CH) to repeat step 1 and 2.

Adjustment level : Playback output of 315Hz to playback output of 10kHz : − 0.5dB to 0.5dB.
(− 1.3 to 1.3mV)

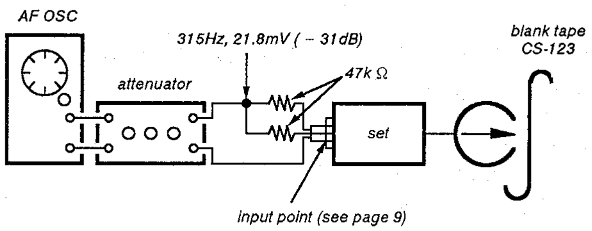
Adjustment Location : MD (BX) board. (see page 11)

Record Level Adjustment DECK B

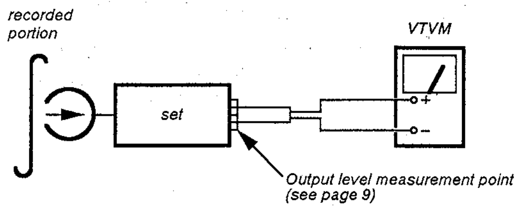
FUNCTION button : CD

Procedure :

1. Record mode


AF OSC
315Hz, 21.8mV (− 31dB)
attenuator
47k Ω
set
blank tape
CS-123
input point (see page 9)

2. Playbacd mode


recorded
portion
set
VTVM
+
−
Output level measurement point
(see page 9)

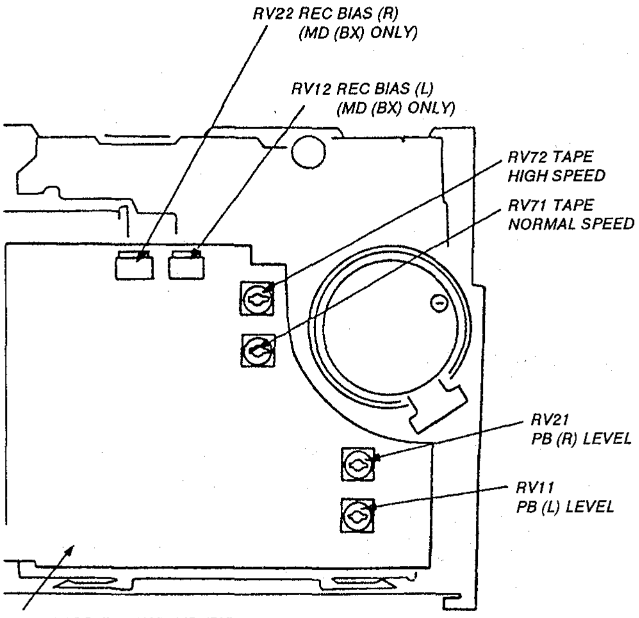
Confirm playback the signal recorded in step become adjustment level as follows.
If these levels do not adjustment level, adjustment the RV401 (L-CH) and RV451 (R-CH) to repeat step 1 and 2.

Adjustment Level :
DOLBY OUT level : − 31dB ± 0.5dB (20.6 to 23.1mV)

Adjustment Location : TC board

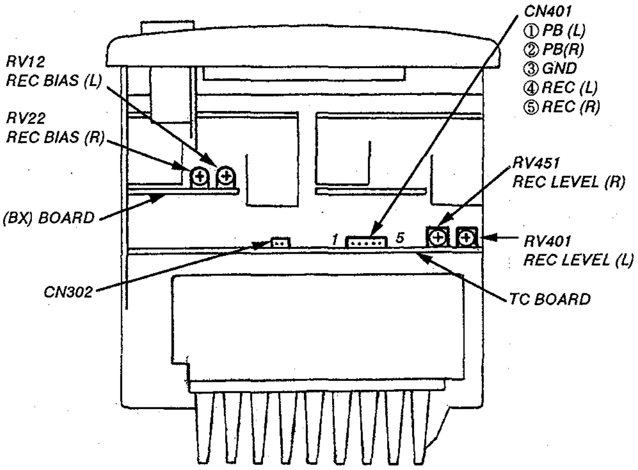
Adjustment Location :

Mechanism deck – rear side –


RV22 REC BIAS (R)
(MD (BX) ONLY)
RV12 REC BIAS (L)
(MD (BX) ONLY)
RV72 TAPE
HIGH SPEED
RV71 TAPE
NORMAL SPEED
RV21
PB (R) LEVEL
RV11
PB (L) LEVEL
MD BOARD (MD (AX), MD (BX)

– Component side –

TC BOARD – Component side –

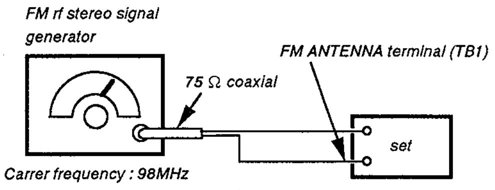

CN401
① PB (L)
② PB(R)
③ GND
④ REC (L)
⑤ REC (R)
RV12
REC BIAS (L)
RV22
REC BIAS (R)
(BX) BOARD
CN302
1
5
RV451
REC LEVEL (R)
RV401
REC LEVEL (L)
TC BOARD

TUNER SECTION

Note : As a front-end (FE1) is difficult to repair if faulty, replace it with new one.

FM Section Adjustments

Setting :


FM rf stereo signal generator
FM ANTENNA terminal (TB1)
75 Ω coaxial
set

Carrer frequency : 98MHz
modulation : 1kHz, 75kHz deviation
(Except German, Italian model)
40kHz deviation
(German, Italian model)

FM Tuned Indication Lighting Level Adjustment

Band : FM

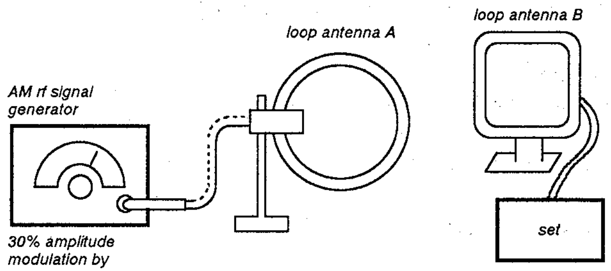
Procedure :

1. German, Italian model :
   Supply a 11μV (21dBμ) 98MHz signal from the ANTENNA terminal.
   Except German, Italian model :
   Supply a 13μV (23dBμ) 98MHz signal from the ANTENNA terminal.
2. Tune the set to 98MHz.
3. Adjust RV1 so that the TUNED light up.
4. German, Italian model :
   Confirm that the TUNED light off with FM RF signal generator output level set at 18 dBμ .
   Except German, Italian model
   Confirm that the TUNED light off with FM RF signal generator output level set at 20 dBμ .

Adjustment Location : Main board

AM Section Adjustment

Setting :


loop antenna A
loop antenna B
AM rf signal generator
set

30% amplitude modulation by 400Hz signal

SW OSC Voltage Adjustment

Band : SW
(E, Australian, Saudi Arabia, Malaysia, Singapore model)

Procedure :

1. Connecct the VOM to JW693 (OSC)
2. Tune the set to 5.95MHz.
3. Adjust T2 for 1.0 to 1.1V reading on the VOM.
4. Tune the set to 17.90MH.
5. Adjust CT2 for 8.4 to 8.6V reading on the VOM.

SW Tracking Adjustment

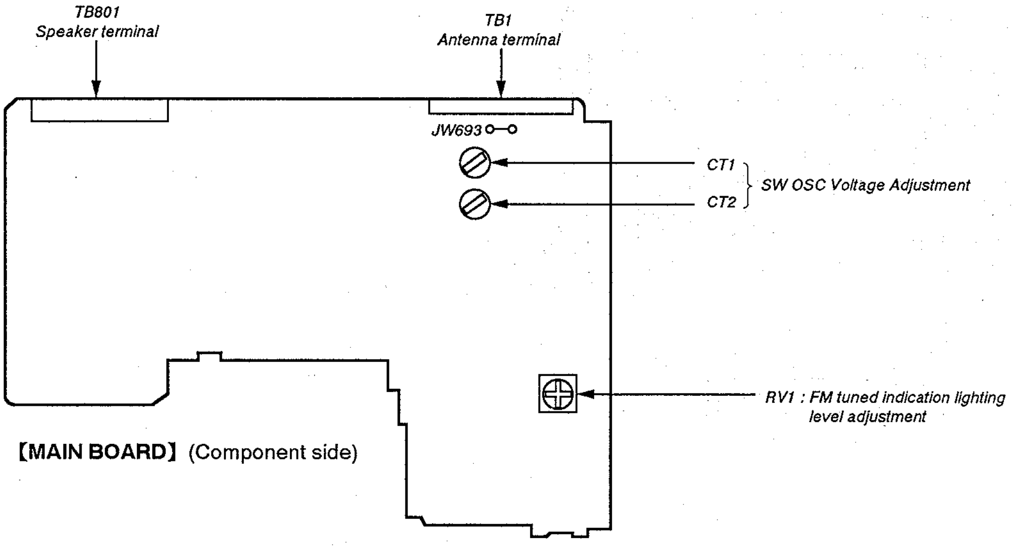
Band : SW

Procedure :

1. Connect the VOM to speaker terminal. (TM801)
2. Adjust for a maximum reading on VOM.

Signal generator and set frequency	Adjustment part
7.0 MHZ	T1
17.0 MHZ	CT1

Adjustment Location : Main board


TB801
Speaker terminal
TB1
Antenna terminal
JW693
CT1
CT2
SW OSC Voltage Adjustment
RV1 : FM tuned indication lighting level adjustment

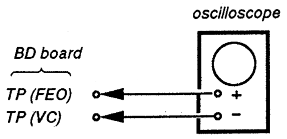
【MAIN BOARD】 (Component side)

CD SECTION

Note :

1. CD Block basically constructed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use the oscilloscope with more than 10M Ω impedance.
4. Clean an object lens by an applicator with neutral detergent when the signal level is low than specified value with the following checks.

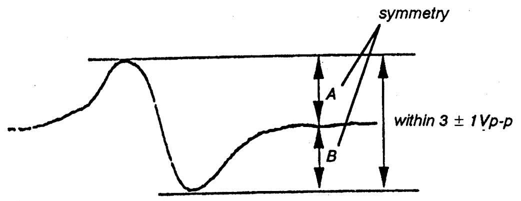
S-Curve Check



Procedure :

1. Connect oscilloscope to test point TP (FEO) and BD board.
2. Connect between test point TP (FES) and TP (VC) by lead wire.
3. Turned Power switch on.
4. Put disc (YEDS-18)in and turned Power switch on again and actuate the focus search. (actuate the focus search when disc table is moving in and out.)
5. Check the oscilloscope waveform (S-curve) is symmetrical between A and B. And confirm peak to peak level within 3 ± 1Vp-p.

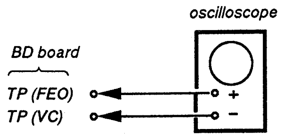
S-curve waveform



6. After check, remove the lead wire connected in step 2.

Note :
- Try to measure several times to make sure that the ratio of A : B or B : A is more than 10 : 7.
- Take sweep time as long as possible and light up the brightness to obtain best waveform.

RF Level Check



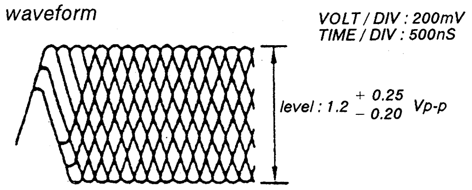
Procedure :

1. Connect oscilloscope to test point TP (RFO) on BD board.
2. Turned Power switch on.
3. Put disc (YEDS-18) in and playback.
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

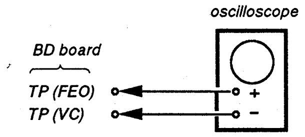
Note :

Clear RF signal waveform means that the shape " ◇ " can be clearly distinguished at the center of the waveform.

RF signal waveform



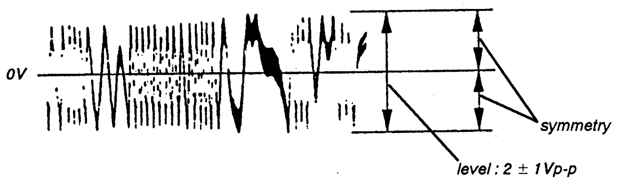
E-F Balance Check



Procedure :

1. Connect test point TP (ADJ) to ground and TP (TES) to TP (VC) with lead wire.
2. Connect oscilloscope to test point TP (TEO) on BD board.
3. Turned Power switch on.
4. Put disc (YEDS-18) in and playback.
5. Confirm that the osilloscope waveform is symmetrical on the top and bottom in relation to 0V, and check this level.

Traverse waveform

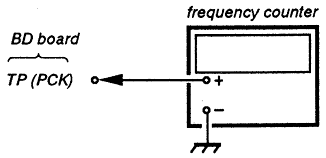


6. Remove the lead wire connected in step 1.

RF PLL Free-run Frequency Check

Procedure :

1. Connect frequency counter to test point (PCK) with lead wire



2. Turned Power switch on.
3. Confirm that reading on frequency counter is 4.3218MHz.

Focus/Tracking Gain

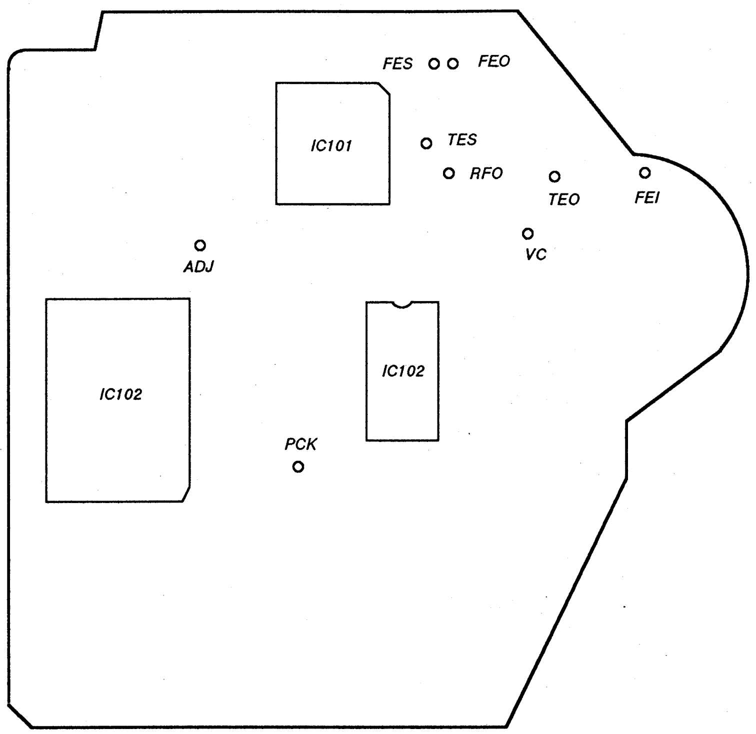
This gain has a margin, so even if it is slightly off. There is no problem.

Therefore, do not perform, this adjustment.

Please note that it should be fixed to mechanical center position when you moved and do not know original position.

Adjustment Location :

[BD BOARD] (SIDE B)



he shape " ◇ " can be
vaveform.

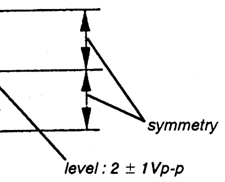
VOLT / DIV : 200mV
TIME / DIV : 500nS

l : 1.2 $^{+0.25}_{-0.20}$ Vp-p

nd and TP (TES) to TP

(TEO) on BD board.

m is symmetrical on the
check this level.


symmetry
level : 2 ± 1Vp-p

ep 1.

nt (PCK) with lead wire

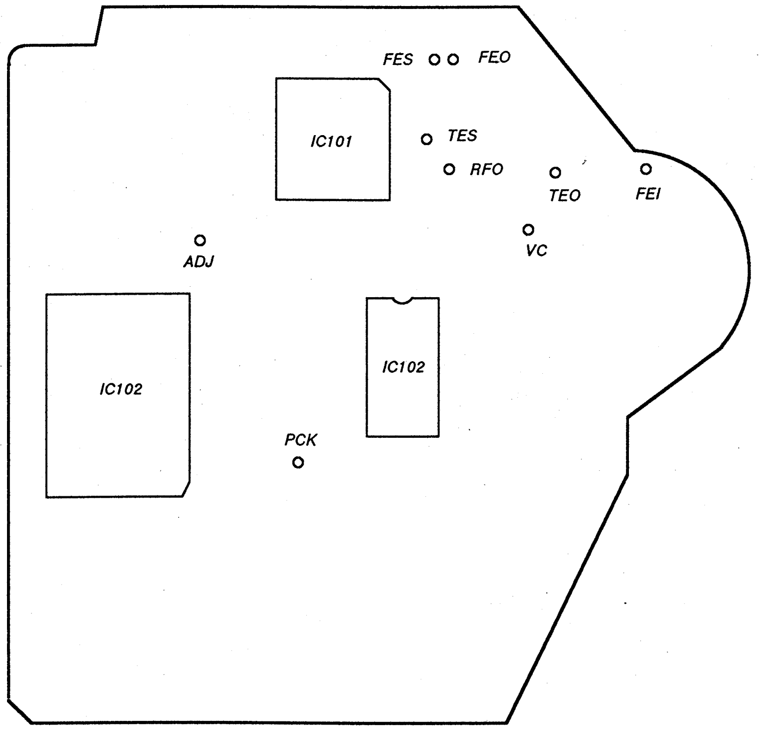
unter is 4.3218MHz.

Focus/Tracking Gain

This gain has a margin, so even if it is slightly off. There is no problem.
Therefore, do not perform, this adjustment.
Please note that it should be fixed to mechanical center position when you moved and do not know original position.

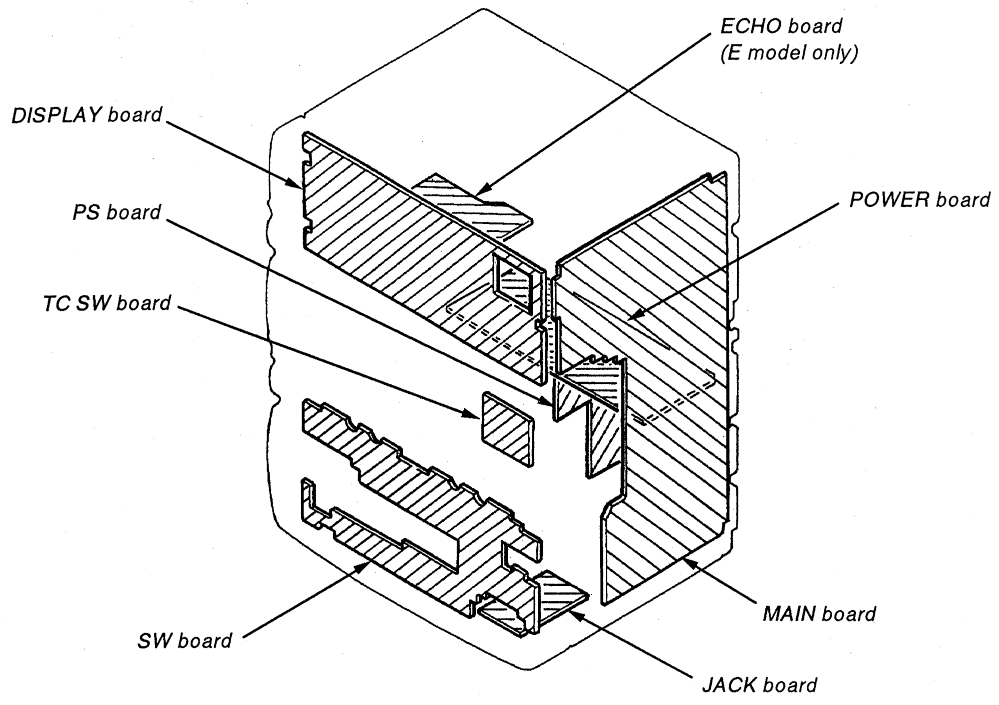
Adjustment Location :

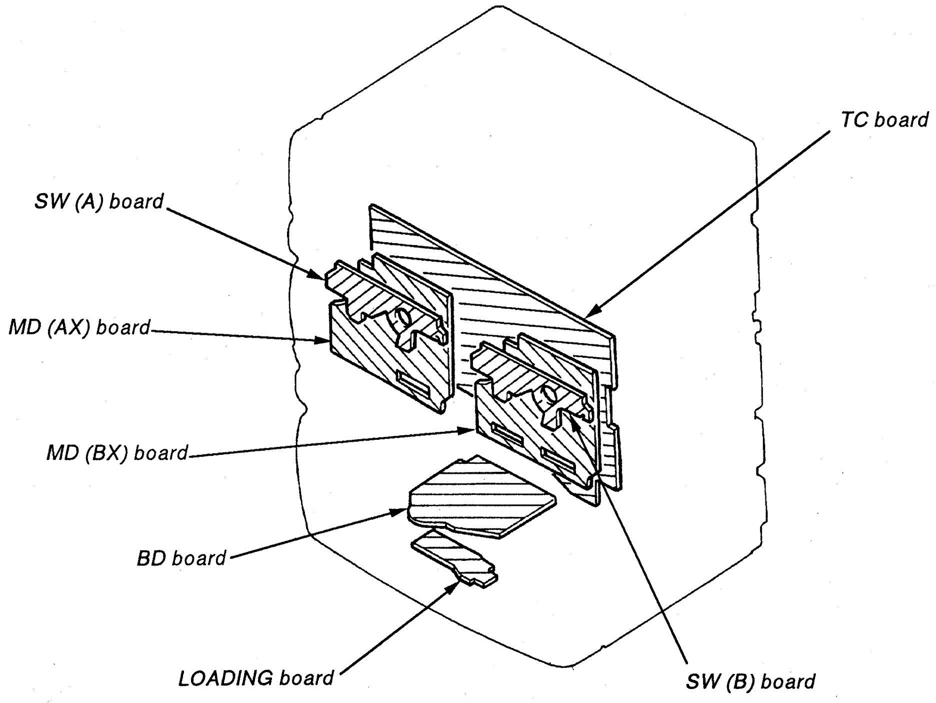
[BD BOARD] (SIDE B)


FES
FEO
IC101
TES
RFO
TEO
FEI
VC
ADJ
IC102
IC102
PCK

SECTION 4
DIAGRAMS

4-1. CIRCUIT BOARD LOCATION


ECHO board
(E model only)
DISPLAY board
PS board
POWER board
TC SW board
MAIN board
SW board
JACK board


TC board
SW (A) board
MD (AX) board
MD (BX) board
BD board
LOADING board
SW (B) board

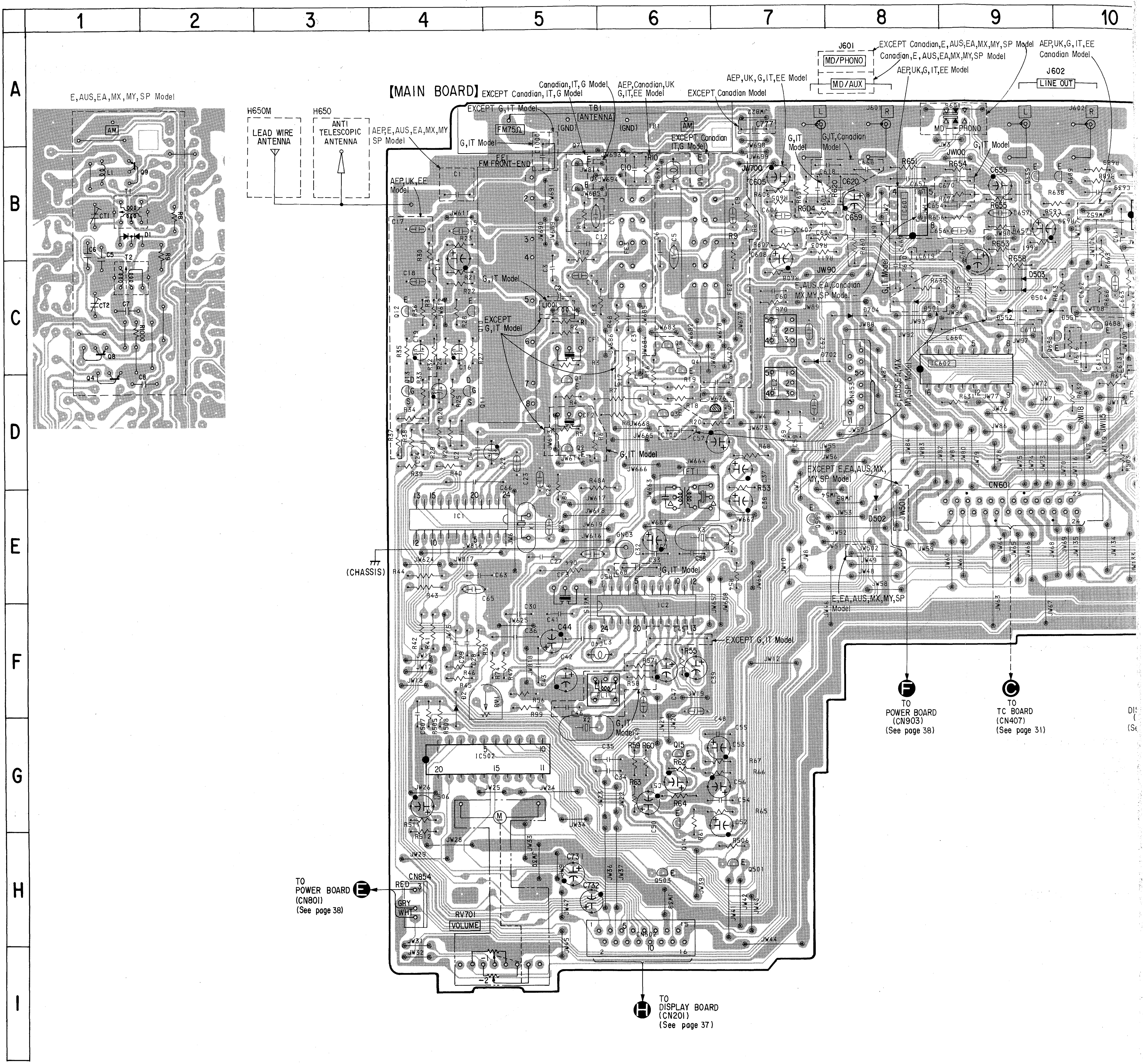
4-2. PRINTED WIRING BOARDS – MAIN SECTION –

- Refer to page 35 for Semiconductor Lead Layouts.

• SEMICONDUCTOR LOCATION

Ref. No.	Location	Ref. No.	Location
D1	B - 1	Q1	D - 5
D2	F - 4	Q2	D - 5
D501	C - 8	Q3	D - 6
D502	E - 8	Q4	C - 6 (D - 1)
D503	C - 9	Q5	D - 7
D504	C - 9	Q6	B - 5
D551	C - 9	Q7	B - 5
D552	C - 9	Q8	C - 6 (C - 1)
D702	C - 7	Q9	B - 6 (B - 1)
D703	C - 13	Q10	C - 4
D704	C - 8	Q11	D - 4
D849	B - 12	Q12	C - 4
D899	B - 12	Q13	D - 4
		Q14	G - 6
		Q15	G - 6
IC1	E - 4		
IC2	F - 6	Q501	H - 7
IC501	D - 12	Q503	H - 6
IC502	G - 4	Q599	E - 7
IC601	B - 8	Q638	C - 10
		Q639	B - 9
IC602	C - 9		
IC603	B - 10	Q688	C - 10
IC605	C - 11	Q689	B - 10
IC606	C - 12	Q701	F - 12
IC701	F - 13	Q702	E - 12
		Q731	D - 12
IC731	D - 13		
IC751	C - 14	Q751	F - 12

(   ) : E, AUS, EA, MX, MY, SP Model

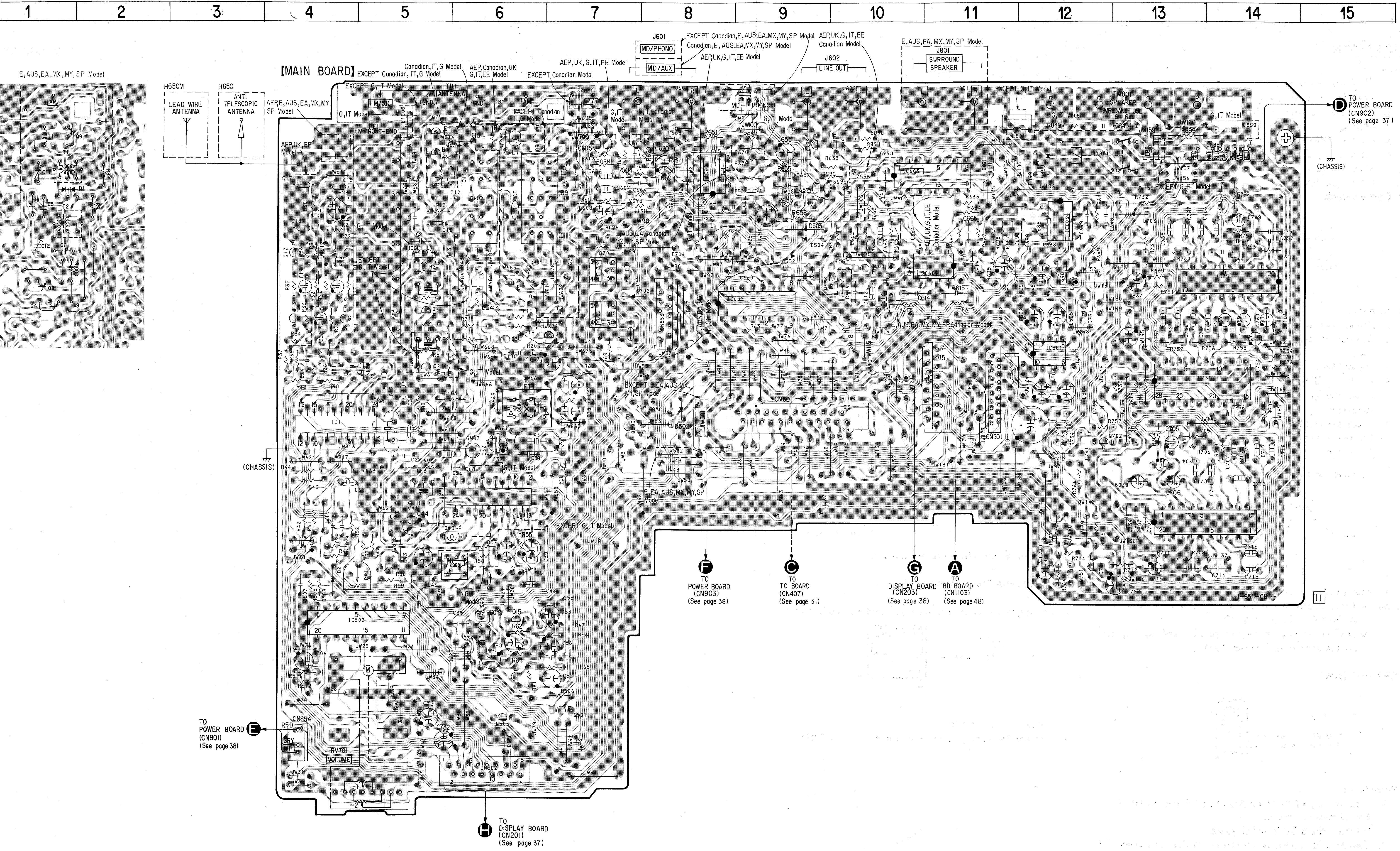

1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
G
H
I
E,AUS,EA,MX,MY,SP Model
H650M
LEAD WIRE ANTENNA
H650
ANTI TELESCOPIC ANTENNA
AEP,E,AUS,EA,MX,MY,SP Model
【MAIN BOARD】
EXCEPT Canadian, IT,G Model
Canadian,IT,G Model
AEP,Canadian,UK G,IT,EE Model
EXCEPT Canadian Model
AEP,UK,G,IT,EE Model
J601
MD/PHONO
MD/AUX
EXCEPT Canadian,E,AUS,EA,MX,MY,SP Model
Canadian,E,AUS,EA,MX,MY,SP Model
AEP,UK,G,IT,EE Model
AEP,UK,G,IT,EE Canadian Model
J602
LINE OUT
TB1
ANTENNA
FM75Ω
AM
FE1 FM FRONT-END
G,IT Model
AEP,UK,EE Model
EXCEPT G,IT Model
E,AUS,EA,Canadian MX,MY,SP Model
EXCEPT E,EA,AUS,MX,MY,SP Model
E,EA,AUS,MX,MY,SP Model
IC1
IC2
IC502
IC602
CN601
(CHASSIS)
EXCEPT G,IT Model
CN854
RED
GRY
WHT
RV701
VOLUME
CN802
TO POWER BOARD (CN801) (See page 38)
TO POWER BOARD (CN903) (See page 38)
TO TC BOARD (CN407) (See page 31)
TO DISPLAY BOARD (CN201) (See page 37)

Note:

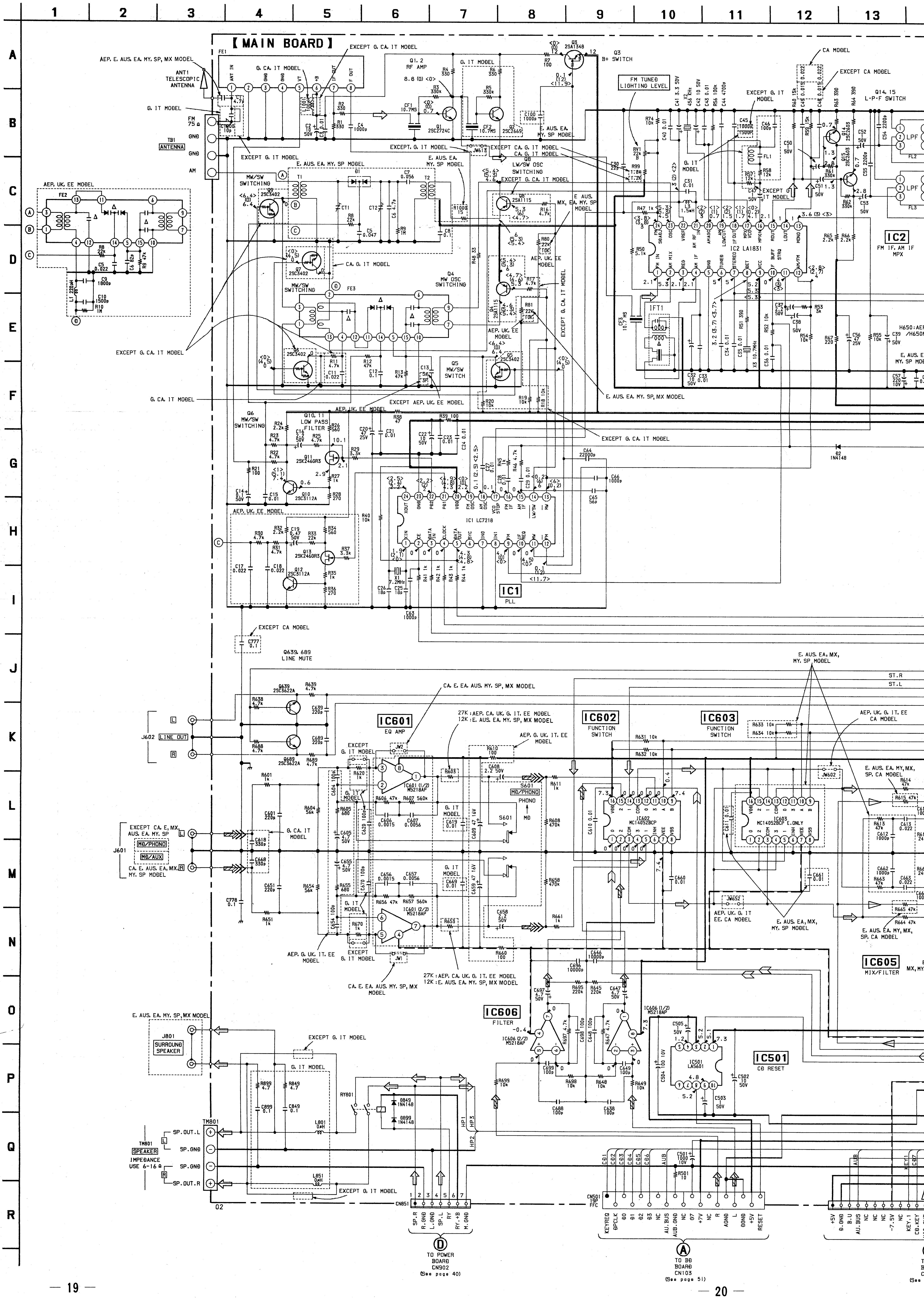
- ○— : parts extracted from the component side.
- ░░░ : Pattern on the side which is seen.

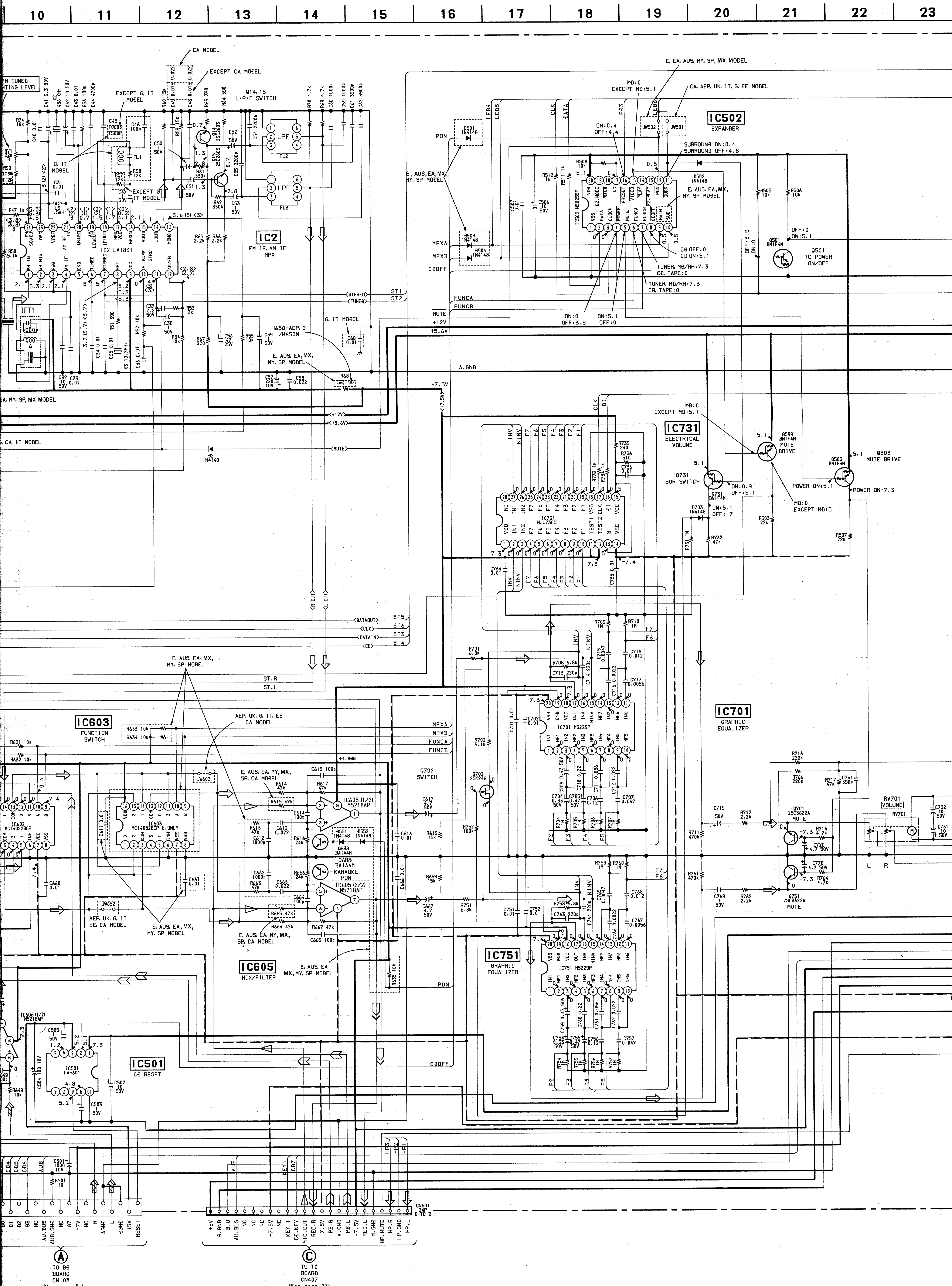
- CA : Canadian
  EA : Saudi Arabia
  EE : East European
  IT : Italian
  AUS : Australian
  G : German
  MA : Malaysia
  SP : Singapore
  MX : Mexican

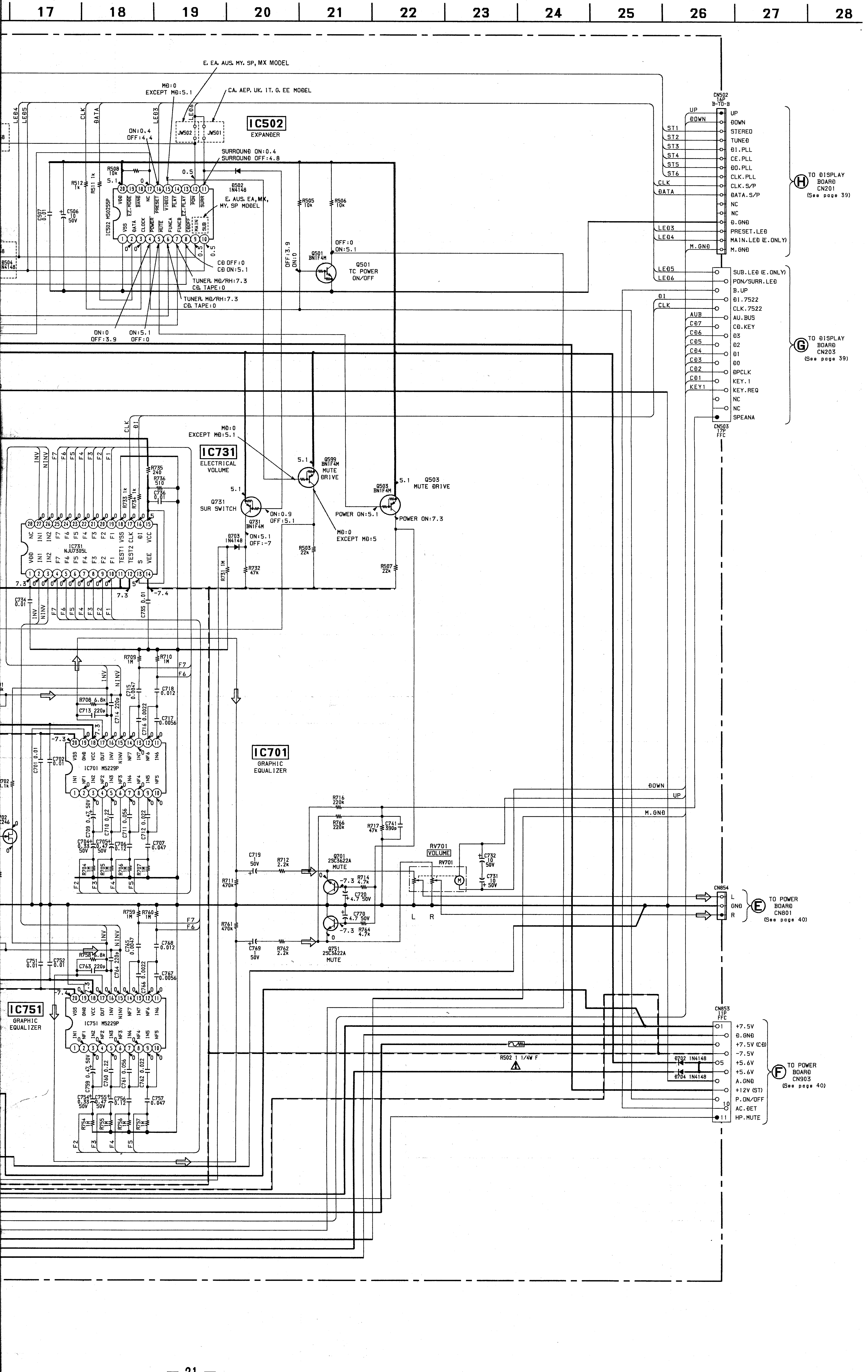
• Refer to page 35 for Semiconductor Lead Layouts.


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
E,AUS,EA,MX,MY,SP Model
H650M
LEAD WIRE ANTENNA
H650
ANTI TELESCOPIC ANTENNA
AEP,E,AUS,EA,MX,MY SP Model
【MAIN BOARD】
EXCEPT Canadian, IT,G Model
Canadian,IT,G Model
AEP,Canadian,UK G,IT,EE Model
AEP,UK,G,IT,EE Model
EXCEPT Canadian Model
J601
MD/PHONO
MD/AUX
EXCEPT Canadian,E,AUS,EA,MX,MY,SP Model
Canadian,E,AUS,EA,MX,MY,SP Model
AEP,UK,G,IT,EE Model
AEP,UK,G,IT,EE Canadian Model
J602
LINE OUT
E,AUS,EA,MX,MY,SP Model
J801
SURROUND SPEAKER
EXCEPT G,IT Model
TB1
ANTENNA
FM75Ω
AM
(GND)
EFE1
FM FRONT-END
G,IT Model
EXCEPT Canadian IT,G Model
AEP,UK,EE Model
TM801
SPEAKER IMPEDANCE USE 6-16Ω
TO POWER BOARD (CN902) (See page 37)
(CHASSIS)
IC1
IC2
IC502
IC601
IC602
IC603
IC605
IC606
IC501
IC731
IC751
IC701
CN601
CN501
CN502
CN503
CN854
RED
GRY
WHT
RV701
VOLUME
TO POWER BOARD (CN801) (See page 38)
TO DISPLAY BOARD (CN201) (See page 37)
TO POWER BOARD (CN903) (See page 38)
TO TC BOARD (CN407) (See page 31)
TO DISPLAY BOARD (CN203) (See page 38)
TO BD BOARD (CN1103) (See page 48)
EXCEPT E,EA,AUS,MX, MY,SP Model
E,EA,AUS,MX,MY,SP Model
E,AUS,EA,MX,MY,SP,Canadian Model
E,AUS,EA,Canadian MX,MY,SP Model
AEP,UK,G,IT,EE Canadian Model
EXCEPT G,IT Model
1-651-081-
11

4-3. SCHEMATIC DIAGRAM – MAIN SECTION –

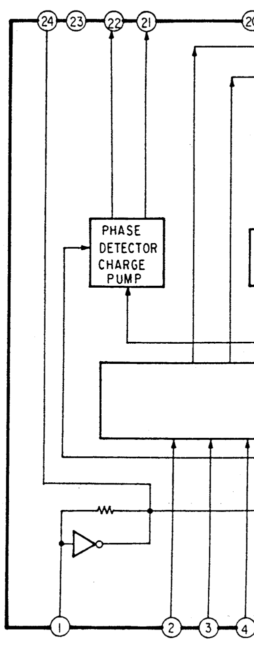

【MAIN BOARD】
ANT1 TELESCOPIC ANTENNA
TB1 ANTENNA
FM 75 Ω
GND
AM
FE1
FE2
FE3
Q1, 2 RF AMP
Q3 B+ SWITCH
Q4 MW OSC SWITCHING
Q5 MW/SW SWITCH
Q6 MW/SW SWITCHING
Q7 MW/SW SWITCHING
Q8 LW/SW OSC SWITCHING
Q9 MW/SW SWITCHING
Q10, 11 LOW PASS FILTER
Q14, 15 L·P·F SWITCH
Q639, 689 LINE MUTE
FM TUNED LIGHTING LEVEL
IC1 LC7218 PLL
IC2 LA1831 FM IF, AM IF MPX
IC601 EQ AMP
IC602 MC14052BCP FUNCTION SWITCH
IC603 MC14052BCP FUNCTION SWITCH
IC605 MIX/FILTER
IC606 M5218AP FILTER
IC501 LA5601 CD RESET
S601 MD/PHONO
J602 LINE OUT
J601 MD/PHONO MD/AUX
J801 SURROUND SPEAKER
TM801 SPEAKER IMPEDANCE USE 6-16 Ω
SP.OUT.L
SP.GND
SP.OUT.R
RY801
CN851
CN501 19P FFC
ⓓ TO POWER BOARD CN902 (See page 40)
Ⓐ TO BD BOARD CN103 (See page 51)
EXCEPT G, CA, IT MODEL
G, IT MODEL
EXCEPT CA MODEL
CA MODEL
E, AUS, EA, MY, SP MODEL
AEP, UK, EE MODEL
AEP, E, AUS, EA, MY, SP, MX MODEL
1 2 3 4 5 6 7 8 9 10 11 12 13
A B C D E F G H I J K L M N O P Q R


10
11
12
13
14
15
16
17
18
19
20
21
22
23
CA MODEL
EXCEPT CA MODEL
FM TUNED
LIGHTING LEVEL
EXCEPT G, IT MODEL
Q14, 15
L·P·F SWITCH
LPF
FL1
FL2
FL3
G, IT MODEL
EXCEPT G IT MODEL
IC2 LA1831
IC2
FM IF, AM IF
MPX
IFT1
X3 10.7MHz
H650:AEP, G
/H650M
E, AUS, EA, MX,
MY, SP MODEL
G, IT MODEL
A.GND
EA, MY, SP, MX MODEL
A, CA, IT MODEL
D2
1N4148
(STEREO)
(TUNED)
ST1
ST2
(+12V)
(+5.6V)
(MUTE)
(R.OUT)
(L.OUT)
(DATAOUT)
(CLK)
(DATAIN)
(CE)
ST5
ST6
ST3
ST4
ST.R
ST.L
PON
D501
1N4148
D503
1N4148
D504
1N4148
MPXA
MPXB
CDOFF
FUNCA
FUNCB
MUTE
+12V
+5.6V
+7.5V
E, EA, AUS, MY, SP, MX MODEL
MD:0
EXCEPT MD:5.1
CA, AEP, UK, IT, G, EE MODEL
IC502
EXPANDER
IC502 M5025SP
JW502
JW501
SURROUND ON:0.4
SURROUND OFF:4.8
D502
1N4148
E, AUS, EA, MX, MY, SP MODEL
ON:0.4
OFF:4.4
CD OFF:0
CD ON:5.1
TUNER, MD/RH:7.3
CD, TAPE:0
ON:0
OFF:3.9
ON:5.1
OFF:0
OFF:0
ON:5.1
Q501
BN1F4M
Q501
TC POWER
ON/OFF
MD:0
EXCEPT MD:5.1
IC731
ELECTRICAL
VOLUME
IC731
NJU7305L
Q599
BN1F4M
MUTE
DRIVE
Q503
BN1F4M
Q503
MUTE DRIVE
Q731
SUR SWITCH
Q731
BN1F4M
ON:0.9
OFF:5.1
POWER ON:5.1
POWER ON:7.3
MD:0
EXCEPT MD:5
D703
1N4148
ON:5.1
OFF:-7
IC701
GRAPHIC
EQUALIZER
IC701 M5229P
IC751
GRAPHIC
EQUALIZER
IC751 M5229P
E, AUS, EA, MX,
MY, SP MODEL
IC603
FUNCTION
SWITCH
IC603
MC14052BCP E.ONLY
IC602
MC14052BCP
AEP, UK, G, IT, EE
CA MODEL
JW602
JW652
AEP, UK, G, IT
EE, CA MODEL
E, AUS, EA, MX,
MY, SP MODEL
E, AUS, EA, MY, MX,
SP, CA MODEL
IC605 (1/2)
M5218AP
IC605 (2/2)
M5218AP
D551
1N4148
D552
1N4148
Q638
BA1A4M
Q688
BA1A4M
KARAOKE
PON
IC605
MIX/FILTER
E, AUS, EA
MX, MY, SP MODEL
Q702
SWITCH
Q702
2SK246
Q701
2SC3622A
MUTE
Q751
2SC3622A
MUTE
RV701
VOLUME
L
R
IC606 (1/2)
M5218AP
IC501
LA5601
IC501
CD RESET
+4.80V
CN601
24P
B-TO-B
AU. BUS
AU. GND
NC
D7
+7V
NC
R
AGND
L
DGND
+5V
RESET
+5V
D.GND
B.U
AU.BUS
NC
NC
NC
-7.5V
KEY.1
CD.KEY
MIC.OUT
REC.R
-7.5V
PB.R
A.GND
PB.L
+7.5V
REC.L
M.GND
HP.MUTE
HP.GND
HP.L
HP3
HP2
HP1
AUB
KEY1
CD7
Ⓐ
TO BD
BOARD
CN103
(See page 51)
Ⓒ
TO TC
BOARD
CN407
(See page 27)

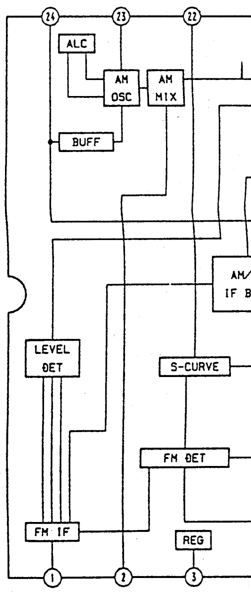

17
18
19
20
21
22
23
24
25
26
27
28
E, EA, AUS, MY, SP, MX MODEL
MD:0
EXCEPT MD:5.1
CA, AEP, UK, IT, G, EE MODEL
IC502
EXPANDER
JW502
JW501
ON:0.4
OFF:4.4
SURROUND ON:0.4
SURROUND OFF:4.8
D502
1N4148
E, AUS, EA, MX, MY, SP MODEL
IC502 M5025SP
R508 10k
R512 1k
R511 1k
C507 0.01
C506 10 50V
R505 10k
R506 10k
Q501 BN1F4M
Q501
TC POWER
ON/OFF
OFF:0
ON:5.1
OFF:3.9
ON:0
CD OFF:0
CD ON:5.1
TUNER, MD/RH:7.3
CD, TAPE:0
ON:0
OFF:3.9
ON:5.1
OFF:0
D504 1N4148
CN502
16P
B-TO-B
UP
DOWN
STEREO
TUNED
DI.PLL
CE.PLL
DO.PLL
CLK.PLL
CLK.S/P
DATA.S/P
NC
NC
D.GND
PRESET.LED
MAIN.LED (E.ONLY)
M.GND
TO DISPLAY BOARD CN201 (See page 39)
SUB.LED (E.ONLY)
PON/SURR.LED
B.UP
DI.7522
CLK.7522
AU.BUS
CD.KEY
D3
D2
D1
D0
DPCLK
KEY.1
KEY.REQ
NC
NC
SPEANA
CN503
17P
FFC
TO DISPLAY BOARD CN203 (See page 39)
IC731
ELECTRICAL VOLUME
IC731 NJU7305L
MD:0
EXCEPT MD:5.1
Q731
SUR SWITCH
Q731 BN1F4M
ON:0.9
OFF:5.1
D703 1N4148
ON:5.1
OFF:-7
R731 1M
R732 47k
R735 240
R736 510
R733 1k
R734 1k
C736 0.01
C734 0.01
C735 0.01
Q599 BN1F4M
MUTE DRIVE
Q503 BN1F4M
Q503
MUTE DRIVE
POWER ON:5.1
POWER ON:7.3
MD:0
EXCEPT MD:5
R503 22k
R507 22k
IC701
GRAPHIC EQUALIZER
IC701 M5229P
R709 1M
R710 1M
R708 6.8k
C713 220p
C714 220p
C715 0.0047
C716 0.0022
C717 0.0056
C718 0.012
C701 0.01
C702 0.01
C709 0.47 50V
C710 0.22
C711 0.056
C712 0.022
C704 0.33 50V
C705 0.47 50V
C706 0.12
C707 0.047
R704 1M
R705 1M
R706 1M
R707 1M
R716 220k
R766 220k
R717 47k
C741 390p
C719 1 50V
R712 2.2k
R711 470k
Q701 2SC3622A
MUTE
R714 4.7k
C720 4.7 50V
RV701 VOLUME
C732 10 50V
C731 10 50V
C770 4.7 50V
R764 4.7k
R761 470k
C769 1 50V
R762 2.2k
Q751 2SC3622A
MUTE
L
R
CN854
L
GND
R
TO POWER BOARD CN801 (See page 40)
IC751
GRAPHIC EQUALIZER
IC751 M5229P
R759 1M
R760 1M
R758 6.8k
C763 220p
C764 220p
C765 0.0047
C766 0.0022
C767 0.0056
C768 0.012
C751 0.01
C752 0.01
C759 0.47 50V
C760 0.22
C761 0.056
C762 0.022
C754 0.33 50V
C755 0.47 50V
C756 0.12
C757 0.047
R754 1M
R755 1M
R756 1M
R757 1M
R502 1 1/4W F
CN853
11P
FFC
+7.5V
D.GND
+7.5V (CD)
-7.5V
+5.6V
+5.6V
A.GND
+12V (ST)
P.ON/OFF
AC.DET
HP.MUTE
D702 1N4148
D704 1N4148
TO POWER BOARD CN903 (See page 40)

• IC BLOCK DIAGRAM

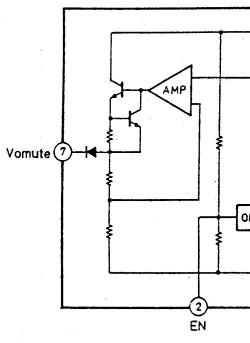
IC1 LC7218


PHASE DETECTOR CHARGE PUMP

IC2 LA1831


ALC
AM OSC
AM MIX
BUFF
AM/ IF B
LEVEL DET
S-CURVE
FM DET
FM IF
REG

IC501 LA5601


AMP
Vomute
EN

Note :

- All capacitors are in μ F unle
50WV or less are not indicate
tantalums.
- All resistors are in Ω and ¼V
specified.
- % : indicates tolerance.
- △ : internal component.

Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	No Le un po Ne piè fié.

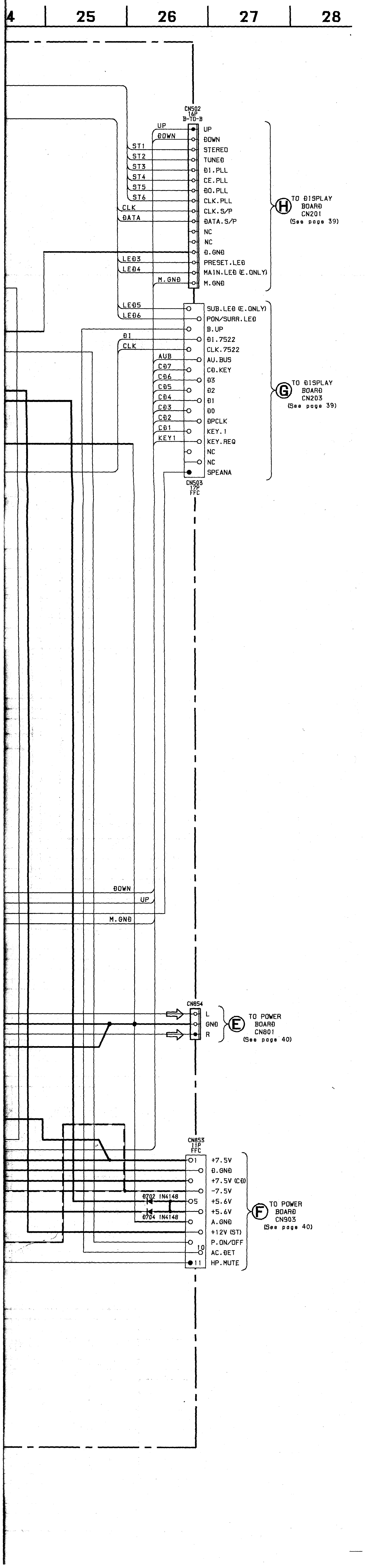
- ▬▬ : B+ Line
- ▬ ▬ ▬ : B − Line
- ☐ : adjustment for rep
- Voltage and waveforms are d
no-signal (detuned) conditio

no mark : FM (RADIO SECT
( ) : AM (MW) (RADIO
〈 〉 : LW/LW (RADIO SE
no mark : PLAYBACK (AUDI
( ) : REC (AUDIO SECT

- Voltages are taken with a VO
Voltage variations may be no
tolerances.
- Signal path.

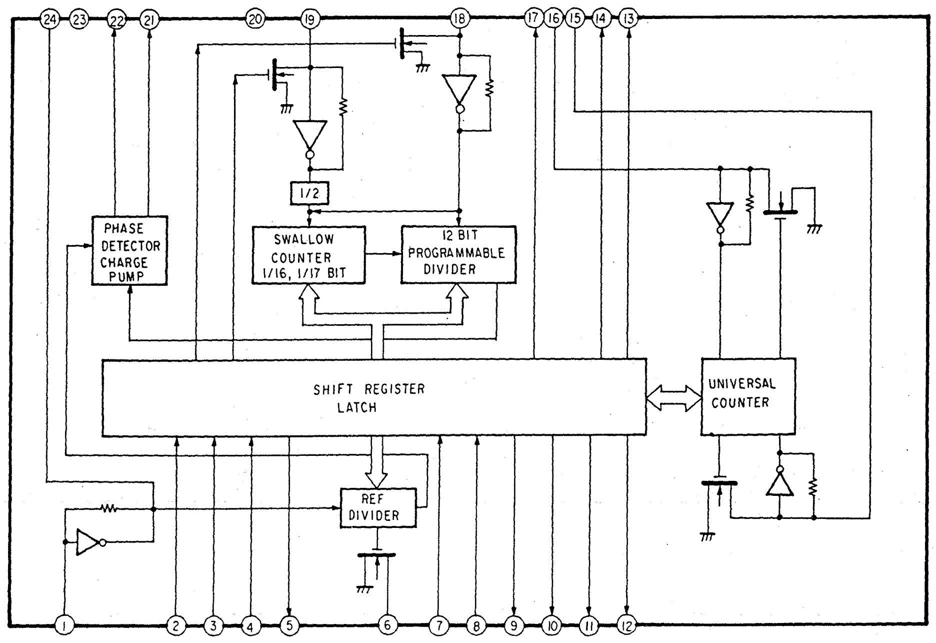
⇨ : FM ⇨ : PB (DE
⇨ : REC (D
▷ : MIC

- CA : Canadian
EA : Saudi Arabia
EE : East European
IT : Italian
AUS : Australian
G : German
MA : Malaysia
SP : Singapore
MX : Mexican

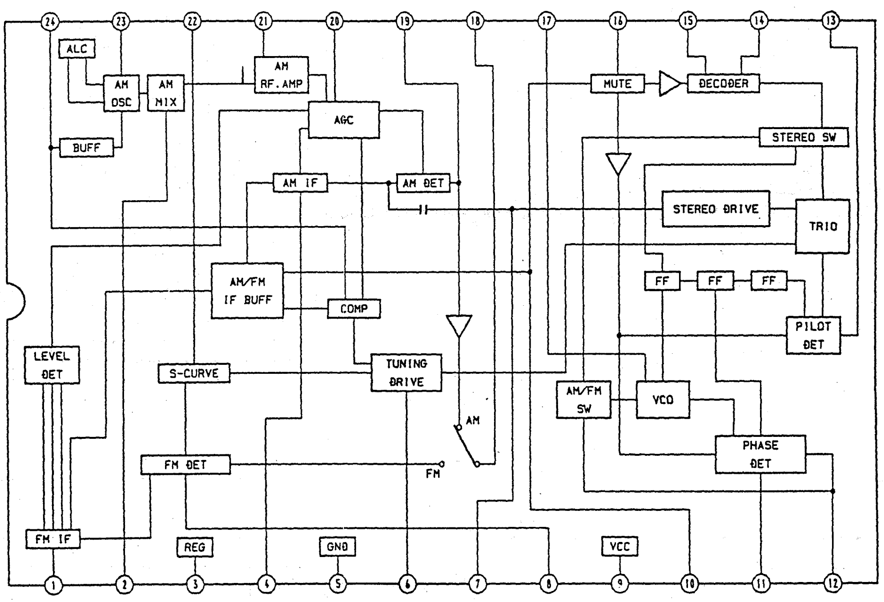

4
25
26
27
28
CN502 16P B-TO-B
UP
DOWN
STEREO
TUNED
B1.PLL
CE.PLL
B0.PLL
CLK.PLL
CLK.S/P
DATA.S/P
NC
NC
D.GND
PRESET.LED
MAIN.LED (E.ONLY)
M.GND
ST1
ST2
ST3
ST4
ST5
ST6
CLK
DATA
LED3
LED4
M.GND
TO DISPLAY BOARD CN201 (See page 39)
H
LED5
LED6
B1
CLK
AUB
CD7
CD6
CD5
CD4
CD3
CD2
CD1
KEY1
SUB.LED (E.ONLY)
PON/SURR.LED
B.UP
B1.7522
CLK.7522
AU.BUS
CD.KEY
B3
B2
B1
B0
DPCLK
KEY.1
KEY.REQ
NC
NC
SPEANA
CN503 17P FFC
TO DISPLAY BOARD CN203 (See page 39)
G
DOWN
UP
M.GND
CN854
L
GND
R
TO POWER BOARD CN801 (See page 40)
E
CN853 11P FFC
+7.5V
D.GND
+7.5V (CD)
-7.5V
+5.6V
+5.6V
A.GND
+12V (ST)
P.ON/OFF
AC.DET
HP.MUTE
D702 1N4148
D704 1N4148
TO POWER BOARD CN903 (See page 40)
F

• IC BLOCK DIAGRAMS – MAIN SECTION –

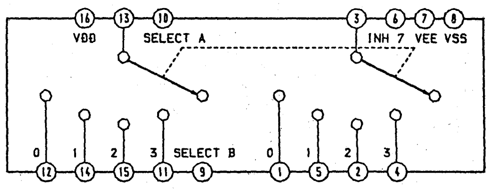
IC1 LC7218


PHASE DETECTOR CHARGE PUMP
1/2
SWALLOW COUNTER 1/16, 1/17 BIT
12 BIT PROGRAMMABLE DIVIDER
SHIFT REGISTER LATCH
UNIVERSAL COUNTER
REF DIVIDER

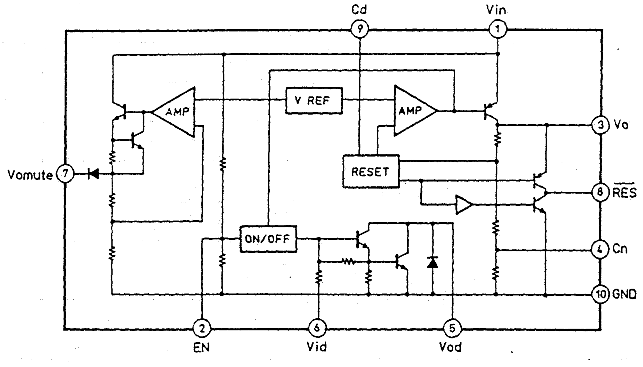
IC2 LA1831


ALC
AM OSC
AM MIX
AM RF.AMP
BUFF
AGC
AM IF
AM DET
MUTE
DECODER
STEREO SW
STEREO DRIVE
TRIG
AM/FM IF BUFF
COMP
FF
FF
FF
PILOT DET
LEVEL DET
S-CURVE
TUNING DRIVE
AM
AM/FM SW
VCO
PHASE DET
FM DET
FM
FM IF
REG
GND
VCC

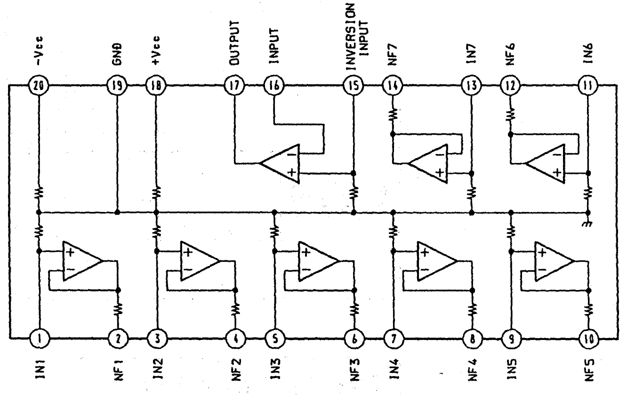
IC602, 603 MC14052BCP


VDD
SELECT A
INH
7
VEE
VSS
0
1
2
3
SELECT B
0
1
2
3

IC501 LA5601


Cd
Vin
AMP
V REF
AMP
Vo
Vomute
RESET
RES
ON/OFF
Cn
GND
EN
Vid
Vod

IC701, 751 M5229P


-Vcc
GND
+Vcc
OUTPUT
INPUT
INVERSION INPUT
NF7
IN7
NF6
IN6
IN1
NF1
IN2
NF2
IN3
NF3
IN4
NF4
IN5
NF5

Note :

- All capacitors are in μ F unless otherwise noted. pF: μ μ F 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼W or less unless otherwise specified.
- % : indicates tolerance.
- △ : internal component.

Note :	Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- ▬▬ : B+ Line
- ▬ ▬ ▬ : B − Line
- ☐ : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.

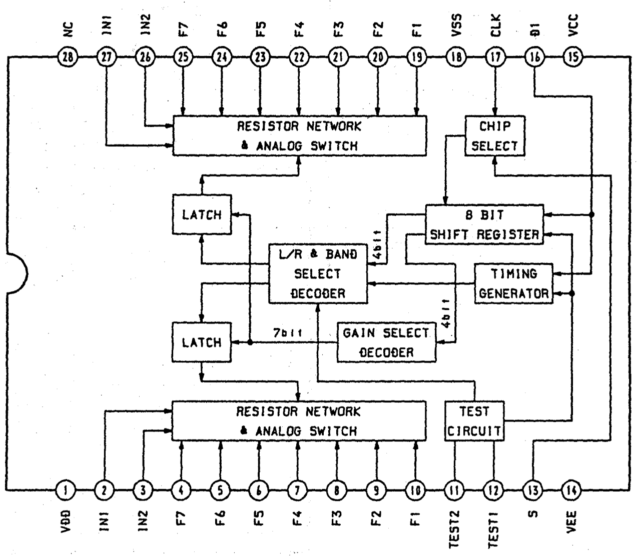
no mark : FM (RADIO SECTION)
( ) : AM (MW) (RADIO SECTION)
〈 〉 : LW/LW (RADIO SECTION)
no mark : PLAYBACK (AUDIO SECTION)
( ) : REC (AUDIO SECTION)

- Voltages are taken with a VOM (Input impedance 10M Ω). Voltage variations may be noted due to normal production tolerances.
- Signal path.

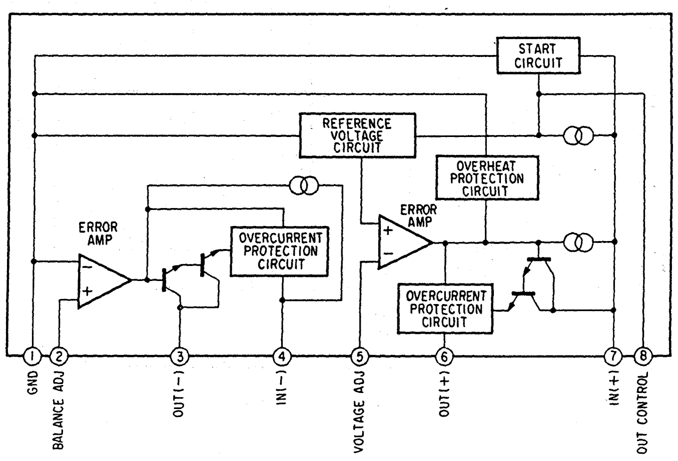
⇨ : FM ⇨ : PB (DECK A) ⇨ : CD
⇨ : REC (DECK B) ⇨ : PHONO
▷ : MIC

- CA : Canadian
EA : Saudi Arabia
EE : East European
IT : Italian
AUS : Australian
G : German
MA : Malaysia
SP : Singapore
MX : Mexican

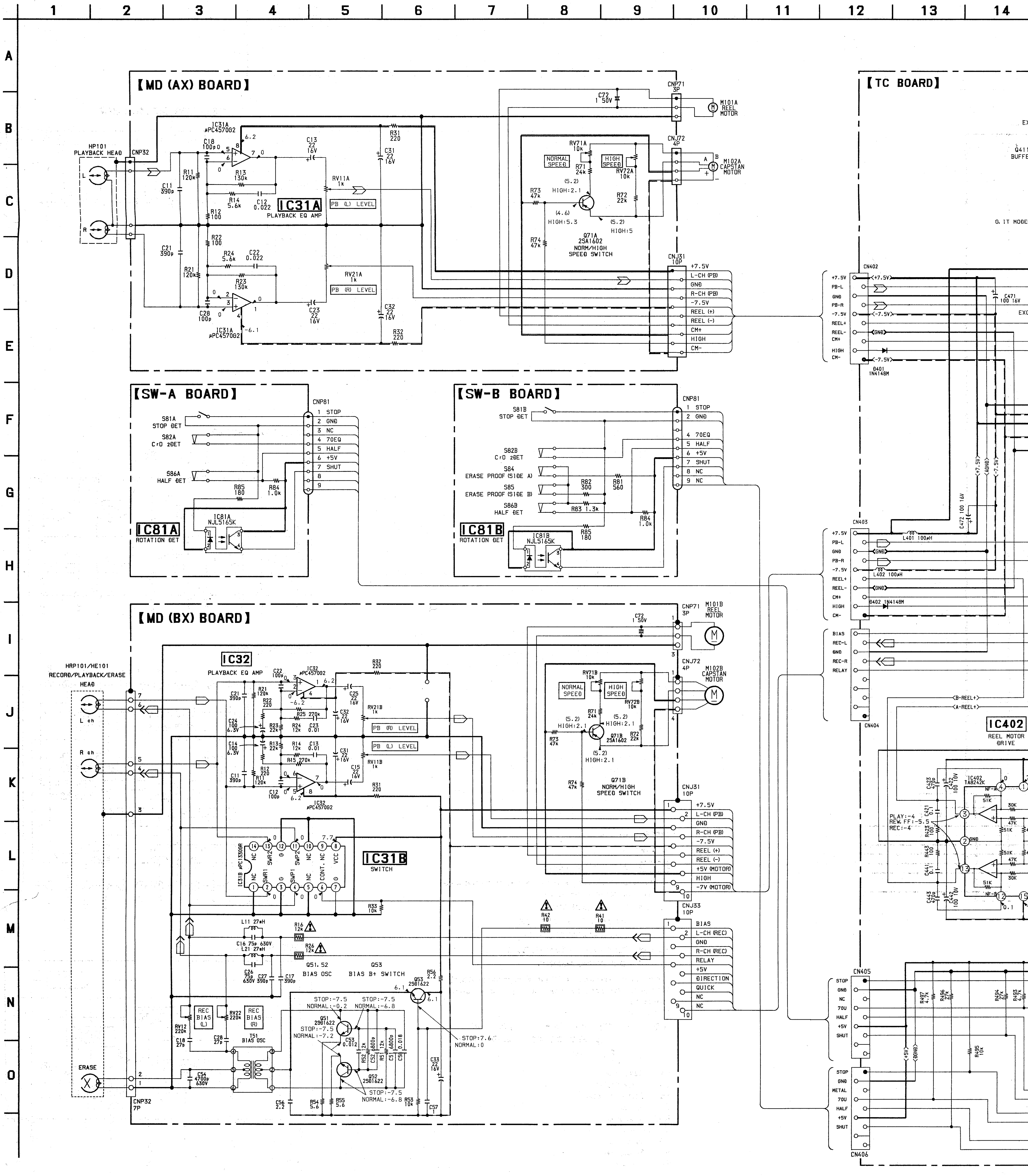
IC731 NJU7305L


NC
IN1
IN2
F7
F6
F5
F4
F3
F2
F1
VSS
CLK
DI
VCC
RESISTOR NETWORK & ANALOG SWITCH
CHIP SELECT
LATCH
8 BIT SHIFT REGISTER
L/R & BAND SELECT DECODER
TIMING GENERATOR
LATCH
GAIN SELECT DECODER
RESISTOR NETWORK & ANALOG SWITCH
TEST CIRCUIT
VDD
IN1
IN2
F7
F6
F5
F4
F3
F2
F1
TEST2
TEST1
S
VEE

IC901 M52301


START CIRCUIT
REFERENCE VOLTAGE CIRCUIT
OVERHEAT PROTECTION CIRCUIT
ERROR AMP
OVERCURRENT PROTECTION CIRCUIT
ERROR AMP
OVERCURRENT PROTECTION CIRCUIT
GND
BALANCE ADJ
OUT(−)
IN(−)
VOLTAGE ADJ
OUT(+)
IN(+)
OUT CONTROL

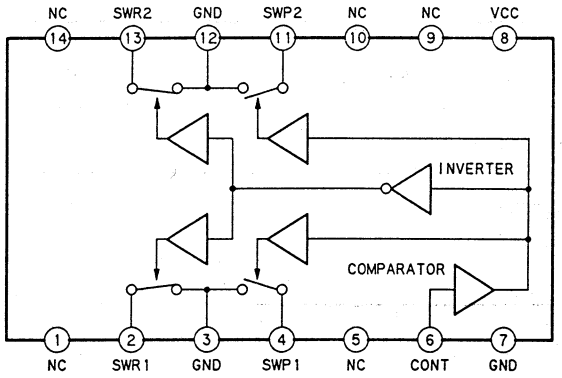
4-4. SCHEMATIC DIAGRAM – DECK SECTION –



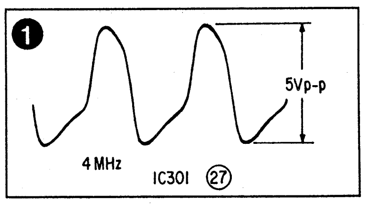
1
2
3
4
5
6
7
8
9
10
11
12
13
14
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
【MD (AX) BOARD】
HP101 PLAYBACK HEAD
CNP32
IC31A μPC4570G2
IC31A PLAYBACK EQ AMP
RV11A 1k
PB (L) LEVEL
RV21A 1k
PB (R) LEVEL
CNP71 3P
M101A REEL MOTOR
CNJ72 4P
M102A CAPSTAN MOTOR
RV71A 10k
NORMAL SPEED
HIGH SPEED
RV72A 10k
Q71A 2SA1602 NORM/HIGH SPEED SWITCH
HIGH:2.1
HIGH:5.3
HIGH:5
CNJ31 10P
+7.5V
L-CH (PB)
GND
R-CH (PB)
-7.5V
REEL (+)
REEL (–)
CM+
HIGH
CM-
【SW-A BOARD】
S81A STOP DET
S82A CrO 2DET
S86A HALF DET
IC81A NJL5165K
IC81A ROTATION DET
CNP81
1 STOP
2 GND
3 NC
4 70EQ
5 HALF
6 +5V
7 SHUT
8
9
【SW-B BOARD】
S81B STOP DET
S82B CrO 2DET
S84 ERASE PROOF (SIDE A)
S85 ERASE PROOF (SIDE B)
S86B HALF DET
IC81B NJL5165K
IC81B ROTATION DET
8 NC
9 NC
【MD (BX) BOARD】
HRP101/HE101 RECORD/PLAYBACK/ERASE HEAD
L ch
R ch
ERASE
IC32
PLAYBACK EQ AMP
IC32 μPC4570G2
RV21B 1k
PB (R) LEVEL
RV11B 1k
PB (L) LEVEL
IC31B SWITCH
IC31B μPC1330HA
M101B REEL MOTOR
M102B CAPSTAN MOTOR
RV71B 10k
RV72B 10k
Q71B 2SA1602
Q71B NORM/HIGH SPEED SWITCH
+5V (MOTOR)
-7V (MOTOR)
CNJ33 10P
BIAS
L-CH (REC)
R-CH (REC)
RELAY
+5V
DIRECTION
QUICK
NC
L11 27mH
L21 27mH
Q51, 52 BIAS OSC
Q53 BIAS B+ SWITCH
Q53 2SD1622
Q51 2SD1622
Q52 2SD1622
STOP:-7.5 NORMAL:-0.2
STOP:-7.5 NORMAL:-6.8
STOP:-7.5 NORMAL:-7.2
STOP:7.6 NORMAL:0
REC BIAS (L)
REC BIAS (R)
RV12 220k
RV22 220k
T51 BIAS OSC
C54 4700p 630V
CNP32 7P
【TC BOARD】
CN402
CN403
CN404
CN405
CN406
D401 1N4148M
D402 1N4148M
L401 100μH
L402 100μH
C471 100 16V
C472 100 16V
IC402
REEL MOTOR DRIVE
IC402 TA8242K
PLAY:-4
REW, FF:-5.5
REC:-4
STOP
GND
NC
70U
HALF
+5V
SHUT
METAL
REEL+
REEL-
PB-L
PB-R
REC-L
REC-R
(B-REEL+)
(A-REEL+)

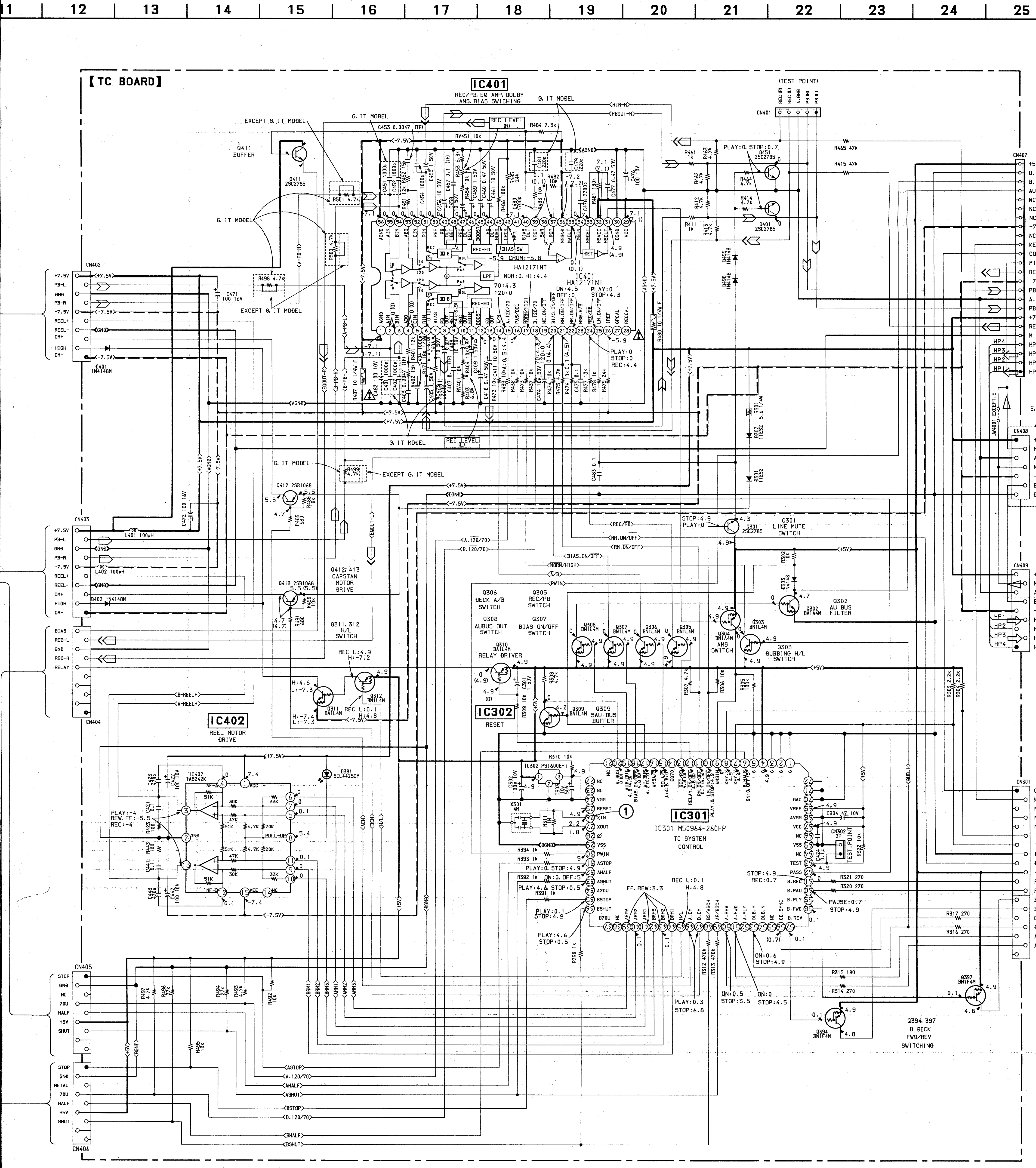
• IC BLOCK DIAGRAMS – DECK SECTION –

IC31B μPC1330GR


NC
SWR2
GND
SWP2
NC
NC
VCC
14
13
12
11
10
9
8
INVERTER
COMPARATOR
1
2
3
4
5
6
7
NC
SWR1
GND
SWP1
NC
CONT
GND

• WAVEFORMS




11
12
13
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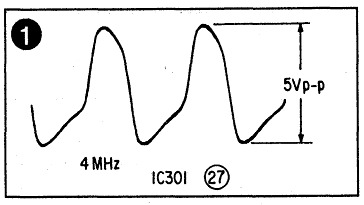
16
17
18
19
20
21
22
23
24
25
【TC BOARD】
IC401
REC/PB EQ AMP, DOLBY
AMS, BIAS SWICHING
HA12171NT
IC401 HA12171NT
G. IT MODEL
EXCEPT G. IT MODEL
REC LEVEL (R)
REC LEVEL (L)
Q411 BUFFER
Q411 2SC2785
CN401
(TEST POINT)
REC (R)
REC (L)
A.GND
PB (R)
PB (L)
PLAY:0, STOP:0.7
Q451 2SC2785
Q401 2SC2785
R465 47k
R415 47k
CN402
CN403
CN404
CN405
CN406
CN407
CN408
CN409
CN301
D401 1N4148M
L401 100μH
L402 100μH
Q412 2SB1068
Q413 2SB1068
Q412, 413 CAPSTAN MOTOR DRIVE
Q311, 312 H/L SWITCH
Q311 BAIL4M
Q312 BNIL4M
IC402
REEL MOTOR DRIVE
IC402 TA8242K
D381 SEL4425GM
Q301 LINE MUTE SWITCH
Q301 2SC2785
Q302 AU BUS FILTER
Q302 BAIA4M
Q306 DECK A/B SWITCH
Q305 REC/PB SWITCH
Q308 AUBUS OUT SWITCH
Q307 BIAS ON/OFF SWITCH
Q304 AMS SWITCH
Q303 DUBBING H/L SWITCH
Q310 BAIL4M RELAY DRIVER
IC302
RESET
IC302 PST600E-T
Q309 BAIL4M
Q309 SAU BUS BUFFER
X301 4M
IC301
IC301 M50964-260FP
TC SYSTEM CONTROL
PLAY:-4
REW, FF:-5.5
REC:-4
REC L:4.9
H:-7.2
REC L:0.1
H:4.8
STOP:4.9
PLAY:0
FF, REW:3.3
REC L:0.1
H:4.8
STOP:4.9
REC:0.7
PAUSE:0.7
STOP:4.9
ON:0.6
STOP:4.9
ON:0.5
STOP:3.5
ON:0
STOP:4.5
PLAY:0.3
STOP:6.8
Q394, 397
B DECK
FWD/REV
SWITCHING
Q397 BN1F4M
Q394 BN1F4M
STOP
GND
NC
70U
HALF
+5V
SHUT
METAL

• WAVEFORMS



Note :

- All capacitors are in μ F unless otherwise noted. pF: μ μ F 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼W or less unless otherwise specified.
- % : indicates tolerance.
- △ : internal component.

Note :	Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

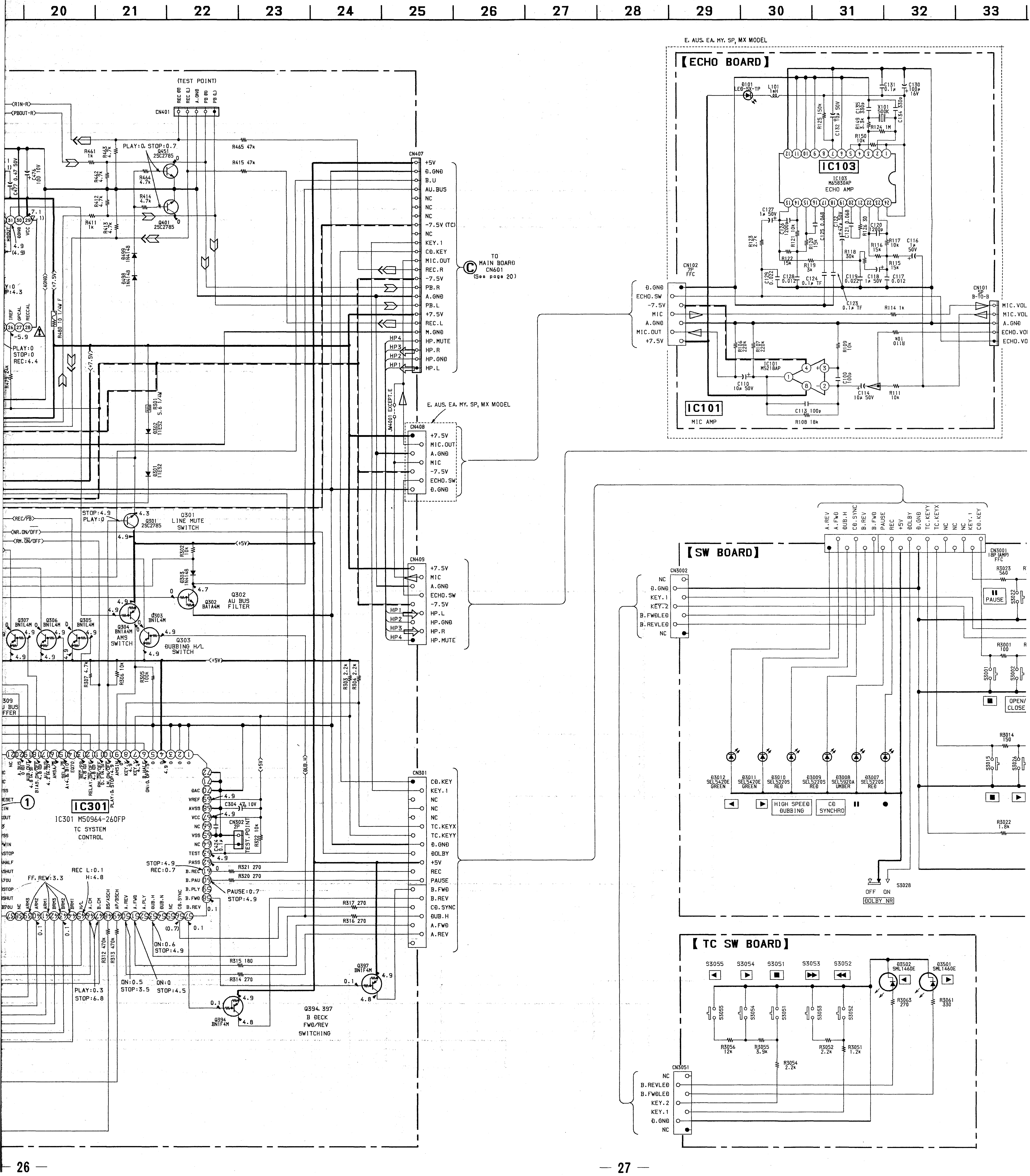
- ▬▬ : B+ Line
- ▬ ▬ ▬ : B – Line
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.

  no mark : PLAYBACK (AUDIO SECTION)

  ( ) : REC (AUDIO SECTION)
- Voltages are taken with a VOM (Input impedance 10M Ω). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.

• Sign
⇨

• CA
EA
EE
IT
AUS
G
MA
SP
MX


20
21
22
23
24
25
26
27
28
29
30
31
32
33
(TEST POINT)
CN401
CN407
TO MAIN BOARD CN601 (See page 20)
Q451 2SC2785
Q401 2SC2785
E. AUS. EA. MY. SP. MX MODEL
【ECHO BOARD】
IC103 M65830AP ECHO AMP
IC101 M5218AP MIC AMP
CN102 7P FFC
CN101 5P B-TO-B
CN408
CN409
Q301 2SC2785 LINE MUTE SWITCH
Q302 BA1A4M AU BUS FILTER
Q303 BN1L4M DUBBING H/L SWITCH
Q304 BN1A4M AMS SWITCH
IC301 M50964-260FP TC SYSTEM CONTROL
CN301
Q394, 397 B DECK FWD/REV SWITCHING
【SW BOARD】
CN3001 18P (AMP) FFC
CN3002
PAUSE
OPEN/CLOSE
HIGH SPEED DUBBING
CD SYNCHRO
S3028 OFF ON DOLBY NR
【TC SW BOARD】
CN3051

μ F unless otherwise noted. pF: μ μ F
t indicated except for electrolytics and

and ¼W or less unless otherwise

nce.
onent.

nti-
ot-

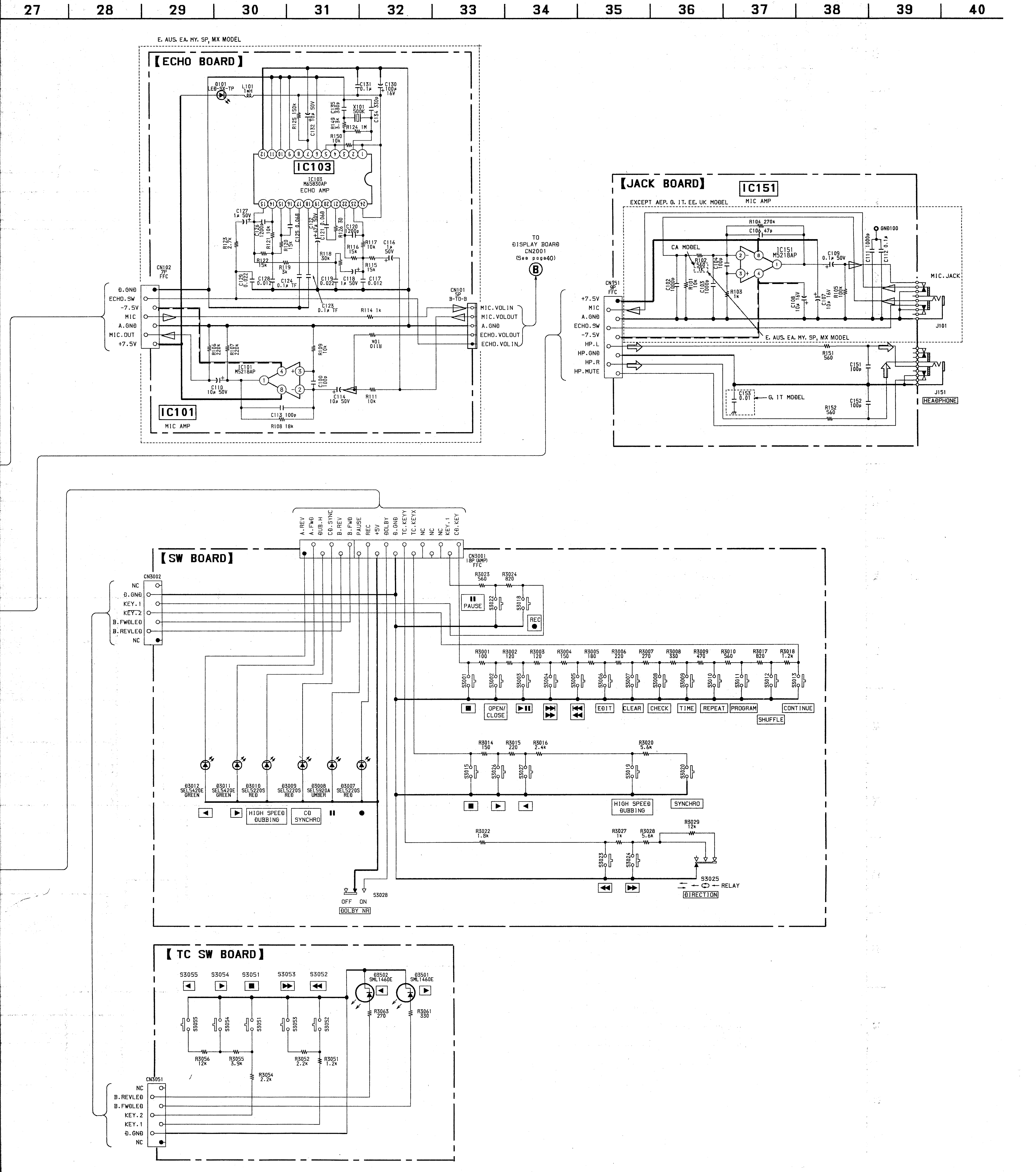
art

Note :
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

- ▬▬ : B+ Line
- ▬ ▬ ▬ : B − Line
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  - no mark : PLAYBACK (AUDIO SECTION)
  - (   ) : REC (AUDIO SECTION)
- Voltages are taken with a VOM (Input impedance 10M Ω). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.

- Signal path.
  - ⇨ : FM
  - ⊃ : PB (DECK A)
  - ⊃ : PB (DECK B)
  - ⊃⟩ : REC (DECK B)
  - ▷ : MIC

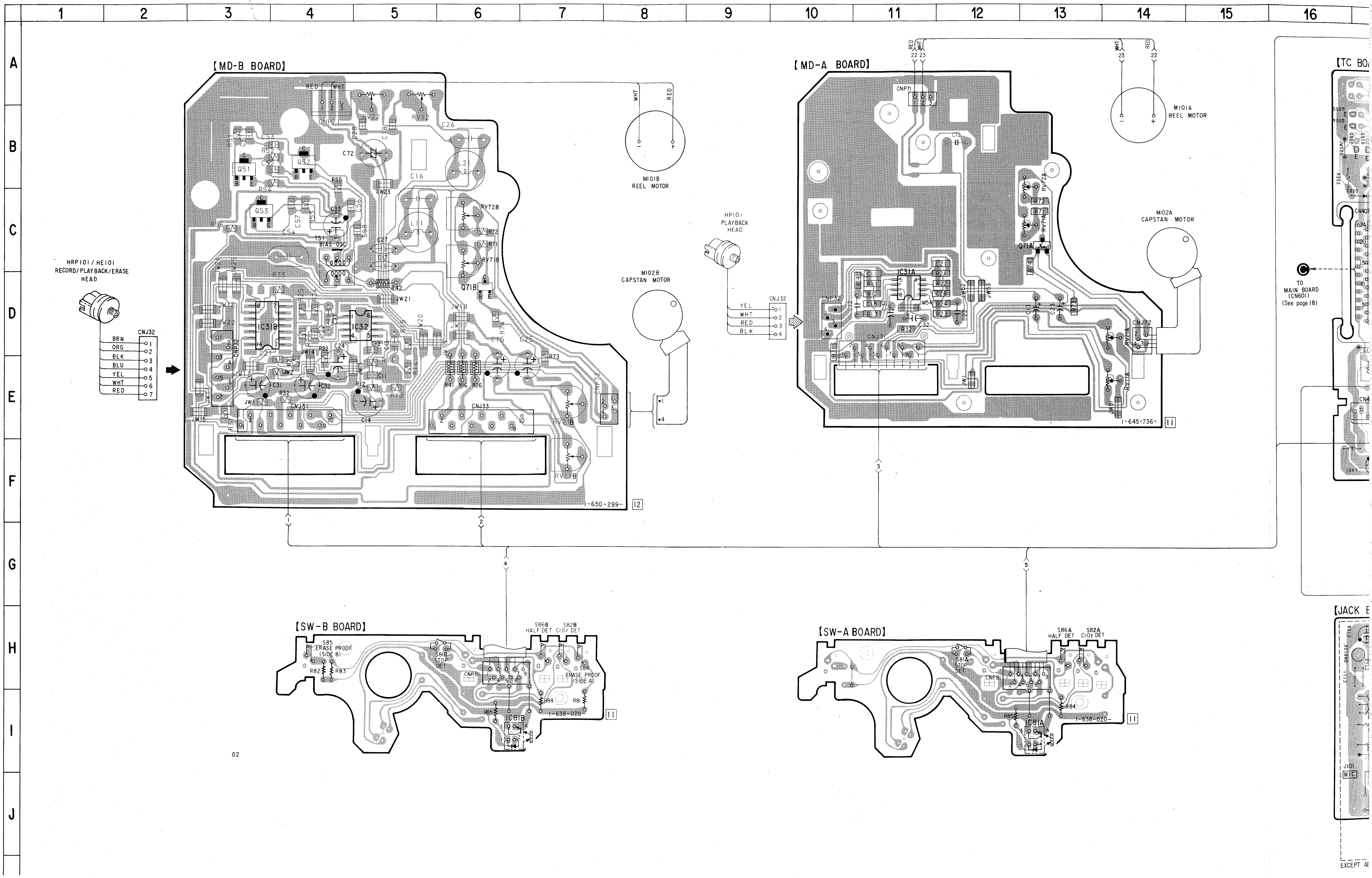
CA	Canadian
EA	Saudi Arabia
EE	East European
IT	Italian
AUS	Australian
G	German
MA	Malaysia
SP	Singapore
MX	Mexican

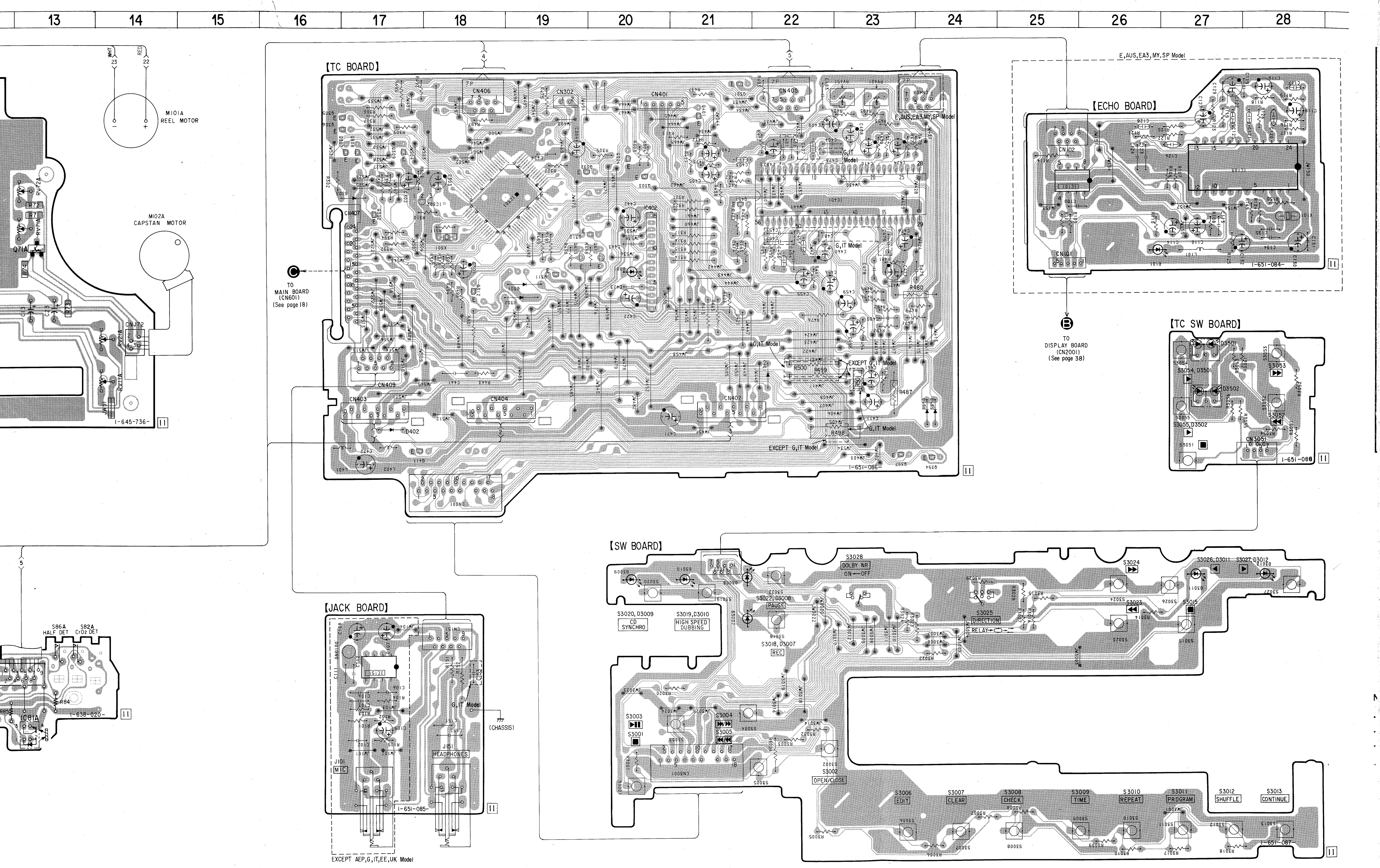


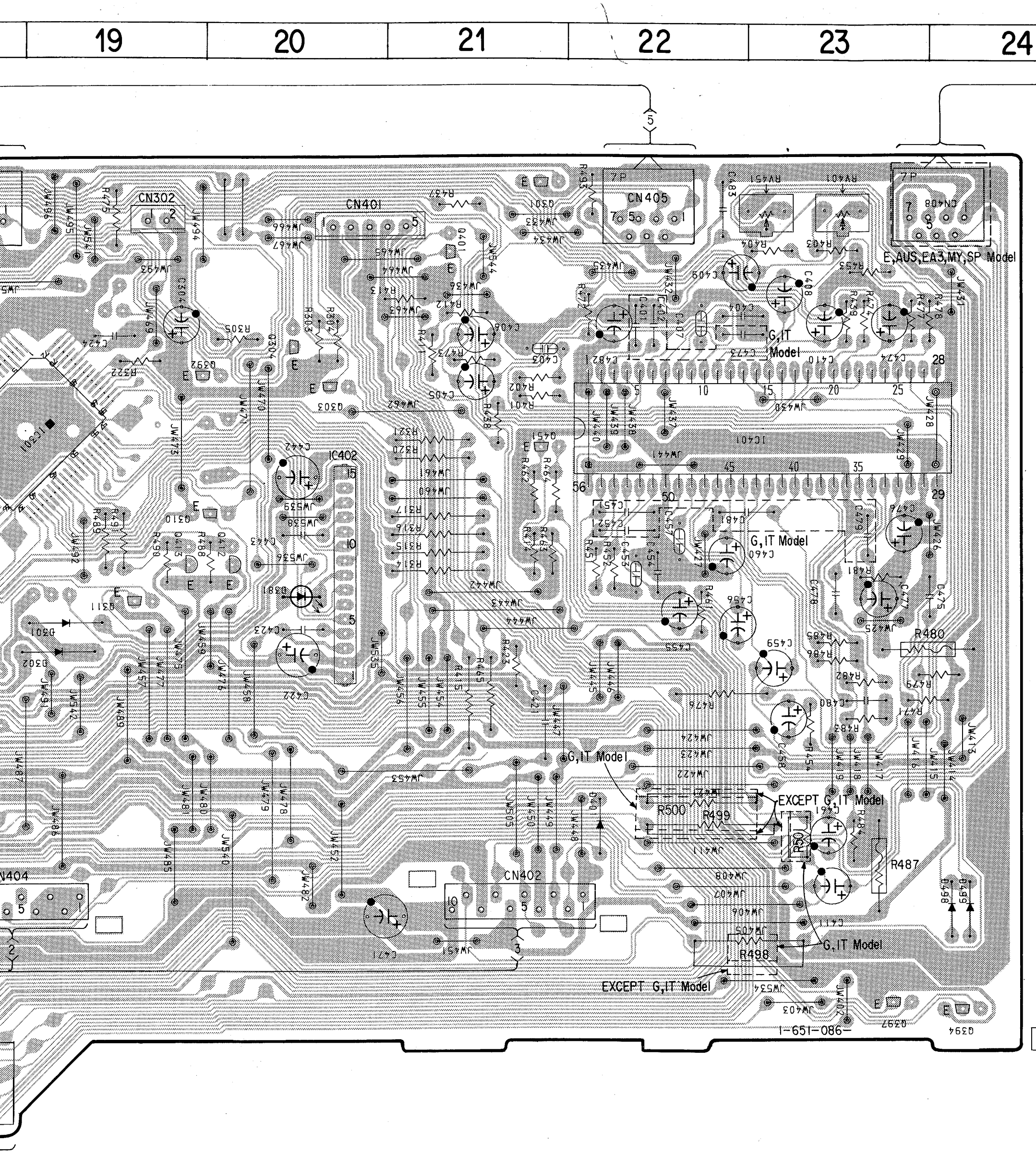
27
28
29
30
31
32
33
34
35
36
37
38
39
40
E. AUS. EA. MY. SP. MX MODEL
【ECHO BOARD】
IC103
M65830AP
ECHO AMP
IC101
M5218AP
MIC AMP
CN102 7P FFC
CN101 5P B-TO-B
Ð.GNÐ
ECHO.SW
-7.5V
MIC
A.GNÐ
MIC.OUT
+7.5V
MIC.VOLIN
MIC.VOLOUT
A.GNÐ
ECHO.VOLOUT
ECHO.VOLIN
TO ÐISPLAY BOARÐ CN2001 (See page40)
B
【JACK BOARD】
IC151
MIC AMP
EXCEPT AEP. G. IT. EE. UK MODEL
IC151 M5218AP
CA MODEL
GNÐ100
CN151 9P FFC
+7.5V
MIC
A.GNÐ
ECHO.SW
-7.5V
HP.L
HP.GNÐ
HP.R
HP.MUTE
E. AUS. EA. MY. SP. MX MODEL
G. IT MODEL
MIC.JACK
J101
J151
HEAÐPHONE
【SW BOARD】
A.REV
A.FWÐ
ÐUB.H
CÐ.SYNC
B.REV
B.FWÐ
PAUSE
REC
+5V
ÐOLBY
Ð.GNÐ
TC.KEYY
TC.KEYX
NC
NC
NC
KEY.1
CÐ.KEY
CN3001 18P (AMP) FFC
CN3002
NC
Ð.GNÐ
KEY.1
KEY.2
B.FWÐLEÐ
B.REVLEÐ
NC
PAUSE
REC
OPEN/CLOSE
EÐIT
CLEAR
CHECK
TIME
REPEAT
PROGRAM
CONTINUE
SHUFFLE
Ð3012 SEL5420E GREEN
Ð3011 SEL5420E GREEN
Ð3010 SEL5220S REÐ
Ð3009 SEL5220S REÐ
Ð3008 SEL5920A UMBER
Ð3007 SEL5220S REÐ
HIGH SPEEÐ ÐUBBING
CÐ SYNCHRO
HIGH SPEEÐ ÐUBBING
SYNCHRO
S3028
OFF ON
ÐOLBY NR
S3025
RELAY
ÐIRECTION
【TC SW BOARD】
S3055
S3054
S3051
S3053
S3052
Ð3502 SML1460E
Ð3501 SML1460E
CN3051
NC
B.REVLEÐ
B.FWÐLEÐ
KEY.2
KEY.1
Ð.GNÐ
NC

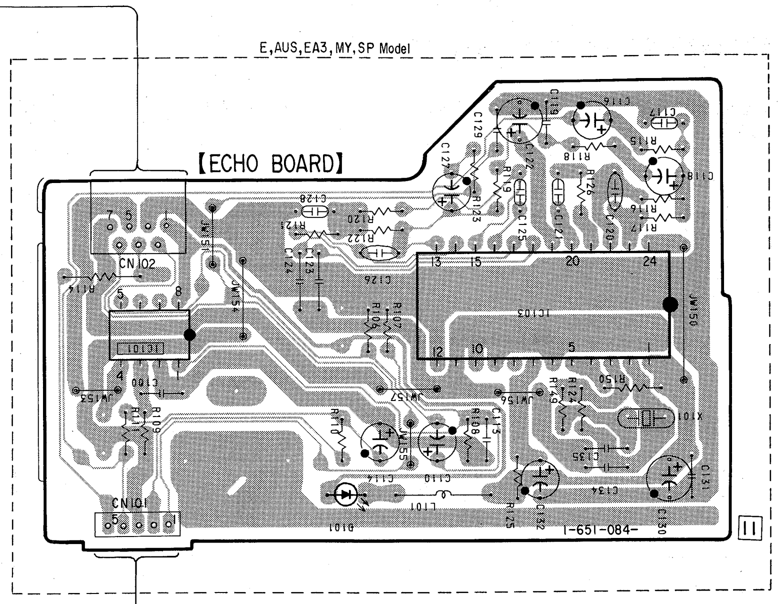
4-5. PRINTED WIRING BOARDS – DECK SECTION –

- Refer to page 35 for Semiconductor Lead Layouts.

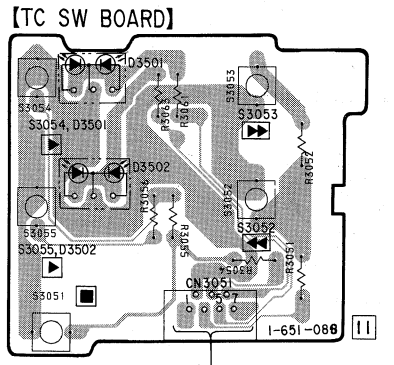

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
[MD-B BOARD]
[MD-A BOARD]
[TC BO
HRP101 / HE101 RECORD/PLAYBACK/ERASE HEAD
CNJ32
BRN
ORG
BLK
BLU
YEL
WHT
RED
M101B REEL MOTOR
M102B CAPSTAN MOTOR
HP101 PLAYBACK HEAD
M101A REEL MOTOR
M102A CAPSTAN MOTOR
TO MAIN BOARD (CN601) (See page 18)
IC31B
IC32
IC31A
CNJ31
CNJ33
CNP71
CNP72
CNJ72
CNP32
T51 BIAS OSC
1-650-299- 12
1-645-736- 11
[SW-B BOARD]
[SW-A BOARD]
S85 ERASE PROOF (SIDE B)
S86B HALF DET
S82B CrO2 DET
S81B STOP DET
S84 ERASE PROOF (SIDE A)
S86A HALF DET
S82A CrO2 DET
S81A STOP DET
IC81B
IC81A
CNP81
1-638-020- 11
[JACK
J101 MIC
EXCEPT AE

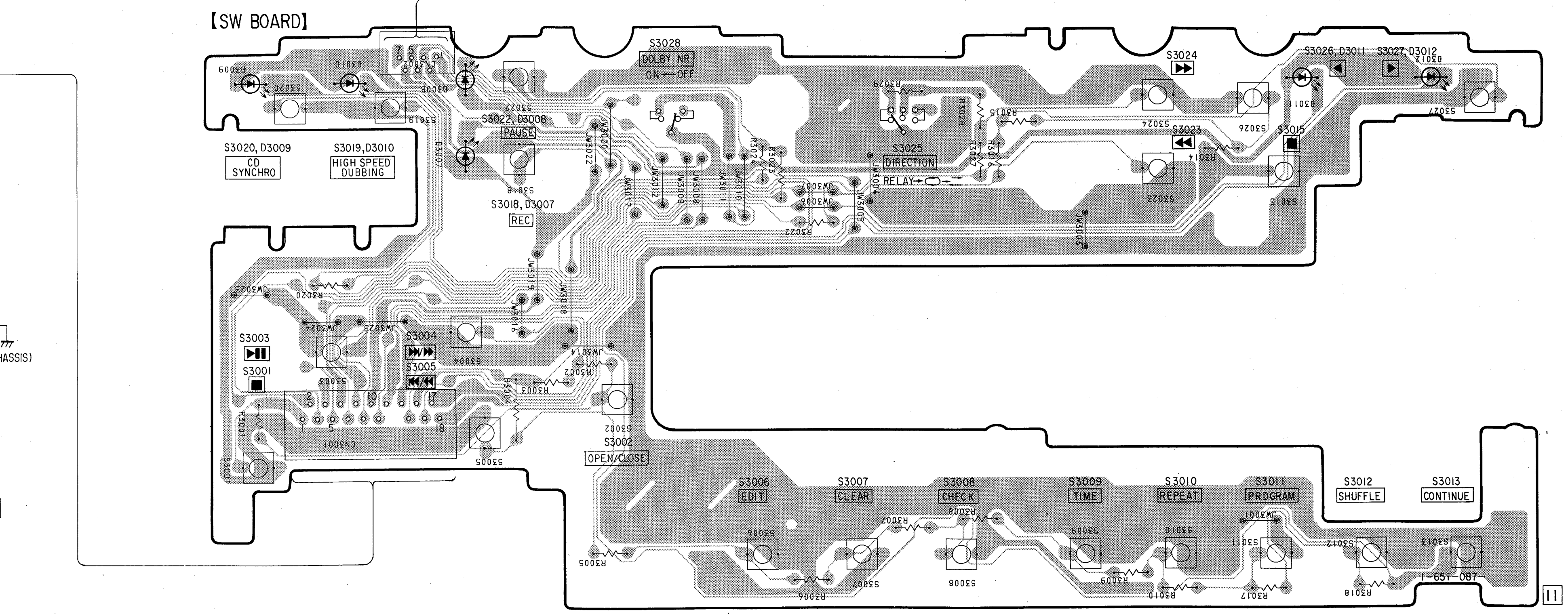

13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
WHT 23
RED 22
M101A REEL MOTOR
M102A CAPSTAN MOTOR
RV72A
RV71A
Q71A
CNJ72
RV21A
RV11A
1-645-736- 11
S86A HALF DET
S82A CrO2 DET
IC81A
1-638-020- 11
【TC BOARD】
CN406
CN302
CN401
CN405
E,AUS,EA3,MY,SP Model
IC301
IC402
IC401
CN407
CN409
CN403
CN404
CN402
G,IT Model
EXCEPT G,IT Model
R500
R499
R487
R480
R488
D402
CN301
1-651-086- 11
TO MAIN BOARD (CN601) (See page 18)
E,AUS,EA3,MY,SP Model
【ECHO BOARD】
CN102
CN101
IC101
IC103
1-651-084- 11
TO DISPLAY BOARD (CN2001) (See page 38)
【TC SW BOARD】
D3501
S3054
S3053
S3054, D3501
D3502
S3055
S3052
S3055, D3502
S3051
CN3051
1-651-080 11
【JACK BOARD】
IC151
CN151
G,IT Model
(CHASSIS)
J101 MIC
J151 HEADPHONES
1-651-085- 11
EXCEPT AEP,G,IT,EE,UK Model
【SW BOARD】
S3028 DOLBY NR ON ←→ OFF
S3024
S3026, D3011
S3027, D3012
S3022, D3008 PAUSE
S3025 DIRECTION
RELAY
S3023
S3015
S3020, D3009 CD SYNCHRO
S3019, D3010 HIGH SPEED DUBBING
S3018, D3007 REC
S3003
S3001
S3004
S3005
S3002 OPEN/CLOSE
CN3001
S3006 EDIT
S3007 CLEAR
S3008 CHECK
S3009 TIME
S3010 REPEAT
S3011 PROGRAM
S3012 SHUFFLE
S3013 CONTINUE
1-651-087- 11


19
20
21
22
23
24
25
26
27
28
CN302
CN401
CN405
7P
E,AUS,EA3,MY,SP Model
G,IT Model
IC402
IC401
G,IT Model
R480
G,IT Model
R500
R499
EXCEPT G,IT Model
R487
CN402
R488
G,IT Model
EXCEPT G,IT Model
1-651-086-
11


E,AUS,EA3,MY,SP Model
【ECHO BOARD】
CN102
IC101
IC103
CN101
1-651-084-
11

B
TO
DISPLAY BOARD
(CN2001)
(See page 38)


【TC SW BOARD】
D3501
S3053
S3054, D3501
D3502
S3052
S3055, D3502
S3051
CN3051
1-651-086
11


【SW BOARD】
S3028
DOLBY NR
ON — OFF
S3024
S3026, D3011
S3027, D3012
S3022, D3008
PAUSE
S3025
DIRECTION
RELAY
S3023
S3015
S3020, D3009
CD SYNCHRO
S3019, D3010
HIGH SPEED DUBBING
S3018, D3007
REC
S3003
S3001
S3004
S3005
CN3001
S3002
OPEN/CLOSE
S3006
EDIT
S3007
CLEAR
S3008
CHECK
S3009
TIME
S3010
REPEAT
S3011
PROGRAM
S3012
SHUFFLE
S3013
CONTINUE
1-651-087
11
ASSIS)

• SEMICONDUCTOR LOCATION

Ref. No.	Location	Ref. No.	Location
D101	C - 26	IC401	C - 23
D301	D - 19	IC402	C - 20
D302	D - 19		
D303	C - 17		
D381	C - 20	Q51	B - 3
		Q52	B - 4
D401	E - 22	Q53	C - 3
D402	E - 17	Q71A	C - 13
D498	E - 24	Q71B	D - 6
D499	E - 24		
D3007	H - 21	Q301	A - 21
		Q302	C - 17
D3008	G - 21	Q303	B - 20
D3009	G - 20	Q304	B - 20
D3010	G - 21	Q305	B - 16
D3011	G - 27		
D3012	D - 28	Q306	B - 16
		Q307	B - 17
D3051	D - 27	Q308	B - 17
D3052	E - 27	Q309	B - 17
		Q310	C - 20
IC31A	D - 11	Q311	D - 19
IC31B	D - 3	Q312	D - 18
IC32	D - 5	Q394	F - 24
IC81A	I - 13	Q397	F - 23
IC81B	I - 6	Q401	B - 21
IC101	B - 25	Q411	F - 17
IC103	B - 27	Q412	C - 20
IC151	H - 17	Q413	C - 19
IC301	C - 19	Q451	C - 21
IC302	C - 18		

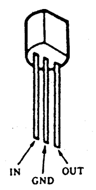
Note:

- ○— : parts extracted from the component side.
- ▨ : Pattern on the side which is seen.
- ☐ : Chip components extracted from the rear side.

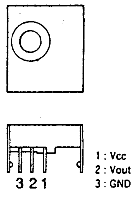
• CA : Canadian
EA : Saudi Arabia
EE : East European
IT : Italian
AUS : Australian
G : German
MA : Malaysia
SP : Singapore
MX : Mexican

• SEMICONDUCTOR LEAD LAYOUTS

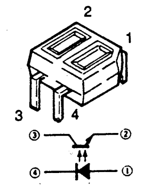
MSM6538-01GS-VKR1
RST600E-T



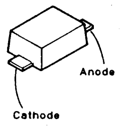
GP1U90XB


1 : Vcc
2 : Vout
3 : GND
3 2 1

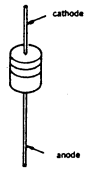
NJL5165K-B(H1)



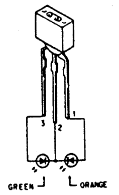
MA-8043-M


Anode
Cathode

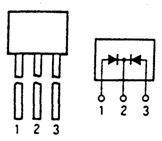
RD6.2ESB2
UZP-7.5B
11ES2


cathode
anode

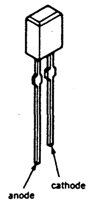
SML1260S


3
2
1
GREEN
ORANGE

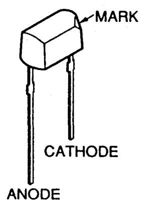
KV1560N



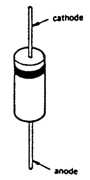
SEL4425GM-TP7


anode
cathode

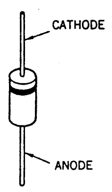
SEL5220S-TP
SEL5420S-TP
SML1460E


MARK
CATHODE
ANODE

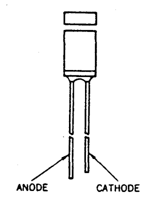
UZP-8.2B


cathode
anode

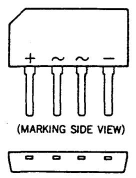
UZ-5.6BS-TP
UZ-30BSD-TP
UZ-12BSC-TP
1N4148M


CATHODE
ANODE

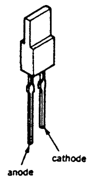
SEL5920A


ANODE
CATHODE

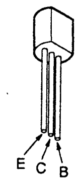
RBA-402


+ ~ ~ −
(MARKING SIDE VIEW)

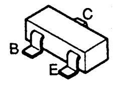
LED-SX-TP


anode
cathode

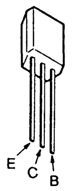
2SB1068-K
2SC1841-PAFAEA
2SC2001TP-K1K2
2SC3112
2SD1616-K



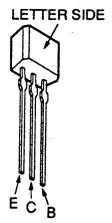
2SA1162-G
2SC3395
2SC4154



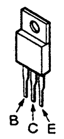
DTA114ES
DTA124ES
DTA144ES
DTC114ES
DTC144ES
2SC2603-EF
2SC3622A-LK
2SC26690Y-TPE4



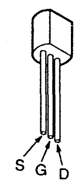
2SA1175-HFE
2SC403SP-51


LETTER SIDE
E
C
B

2SB1094-LK
2SB1375-LC
2SD1406-YGR
2SD2012
2SD2012-LC



2SK246-GR3



• SEMICONDUCTOR LOC

Ref. No.	Location
D201	G - 13
D202	G - 15
D203	H - 14
D204	I - 11
D205	F - 13
D206	I - 14
D207	H - 13
D208	G - 9
D213	I - 7
D214	H - 10
D215	H - 10
D216	G - 11
D217	H - 9
D219	H - 9
D801	B - 12
D851	B - 13
D901	D - 9
D902	D - 8
D903	C - 8
D904	D - 8
D905	C - 8
D906	D - 8
D909	C - 11
D910	C - 13
D911	D - 13
D912	B - 10
D951	C - 4
D2000	G - 9
D2001	I - 13
D2002	G - 15
IC201	F - 12
IC202	F - 14
IC203	I - 13
IC204	G - 15
IC205	G - 14

Note:

- O— : parts extracted fr
- ▨ : Pattern on the

- CA : Canadian
  EA : Saudi Arabia
  EE : East European
  IT : Italian
  AUS : Australian
  G : German
  MA : Malaysia
  SP : Singapore
  MX : Mexican

4-6. PRINTED WIRING BOARDS – DISPLAY SECTION –

• Refer to page 35 for Semiconductor Lead Layouts.

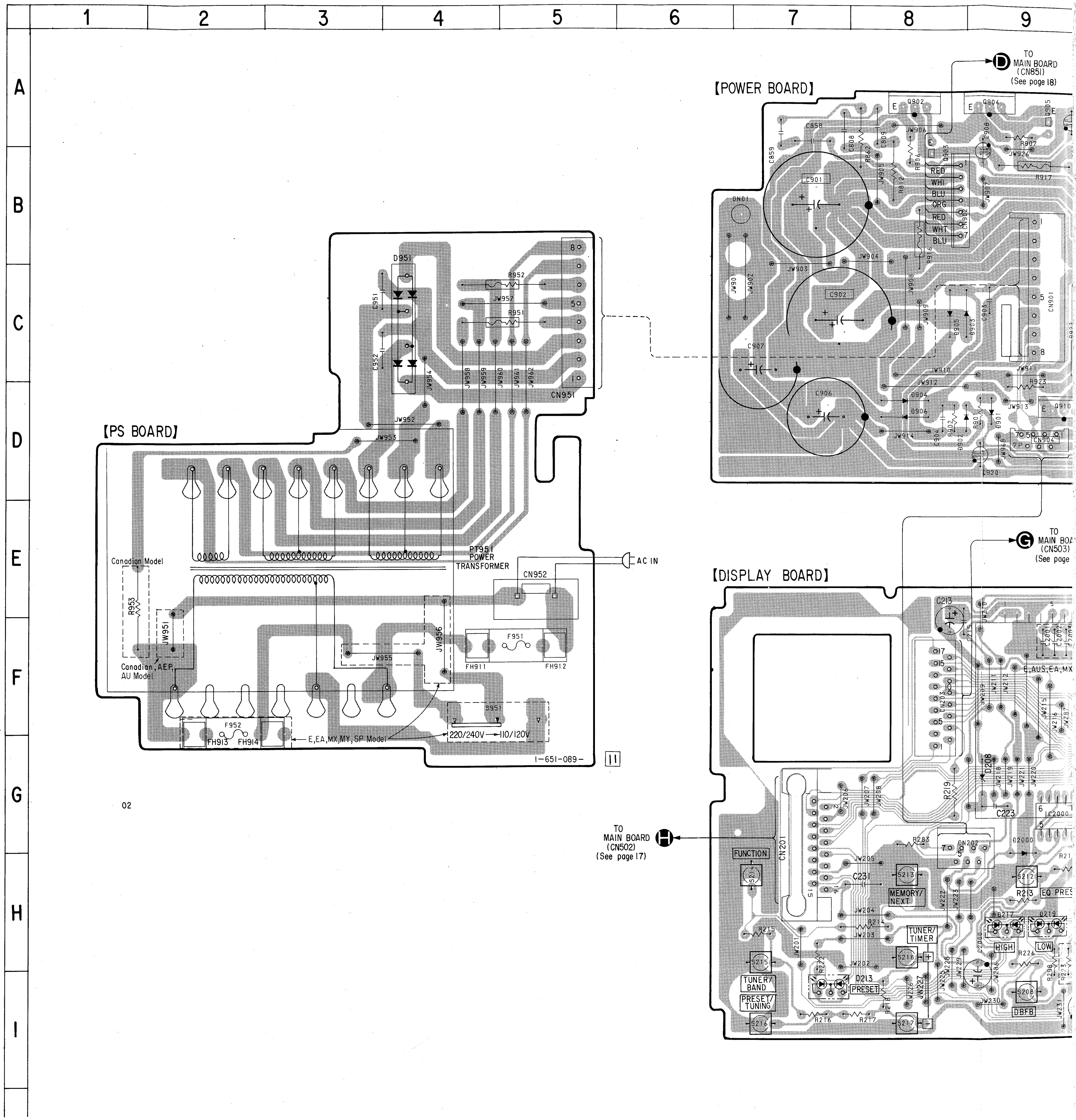
• SEMICONDUCTOR LOCATION

Ref. No.	Location	Ref. No.	Location
D201	G-13	IC206	H-14
D202	G-15	IC801	A-11
D203	H-14	IC802	B-12
D204	I-11	IC901	C-11
D205	F-13	IC2000	G-9
D206	I-14		
D207	H-13	Q201	I-12
D208	G-9	Q202	G-14
D213	I-7	Q203	G-14
D214	H-10	Q204	F-13
		Q205	F-10
D215	H-10		
D216	G-11	Q206	F-10
D217	H-9	Q801	B-11
D219	H-9	Q851	B-13
D801	B-12	Q871	C-11
		Q901	C-11
D851	B-13		
D901	D-9	Q902	A-8
D902	D-8	Q903	B-8
D903	C-8	Q904	A-9
D904	D-8	Q905	A-9
		Q906	C-12
D905	C-8		
D906	D-8	Q907	C-13
D909	C-11	Q908	D-12
D910	C-13	Q909	D-12
D911	D-13	Q910	D-9
D912	B-10		
D951	C-4		
D2000	G-9		
D2001	I-13		
D2002	G-15		
IC201	F-12		
IC202	F-14		
IC203	I-13		
IC204	G-15		
IC205	G-14		

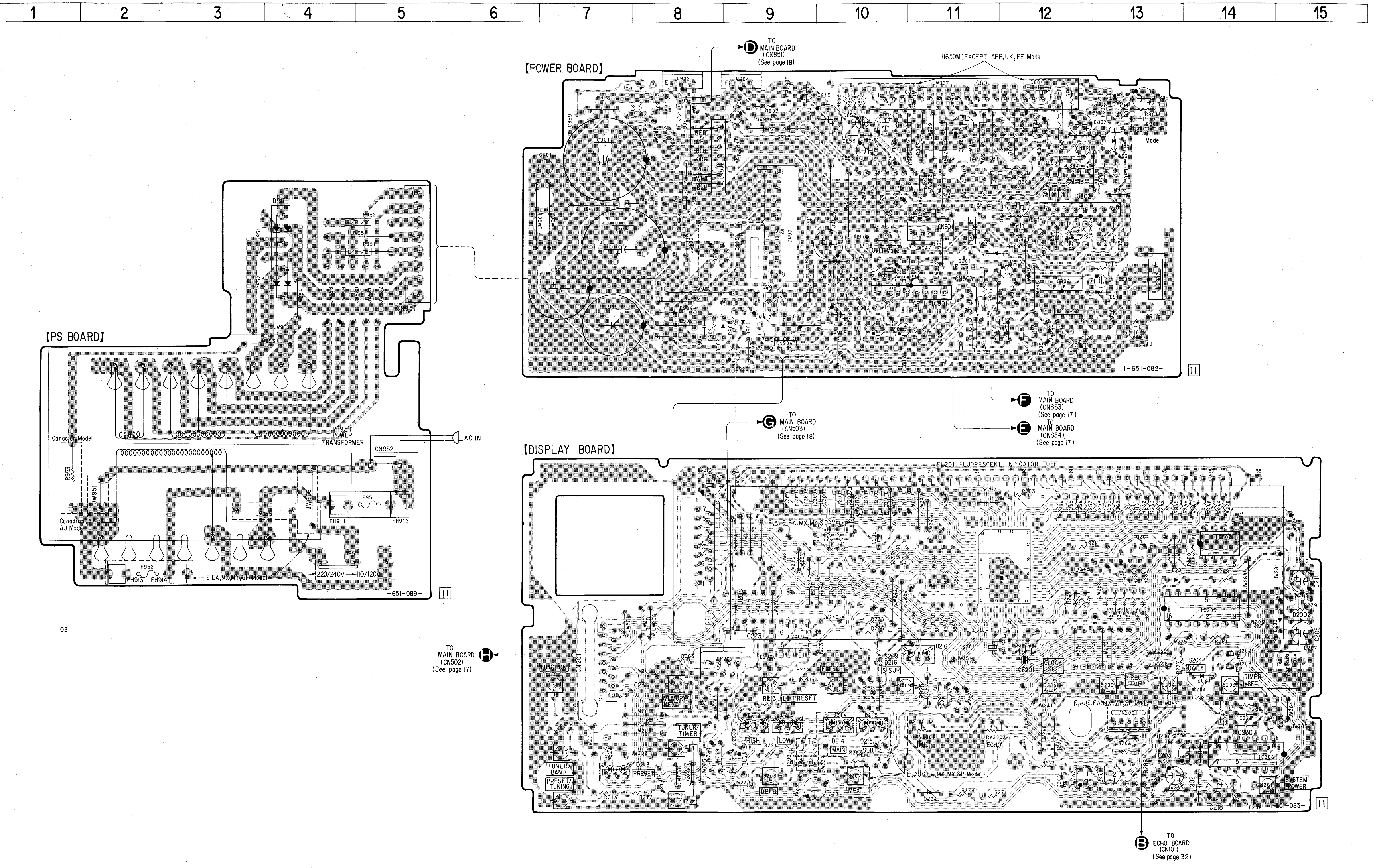
Note:

- ○— : parts extracted from the component side.
- ▨ : Pattern on the side which is seen.

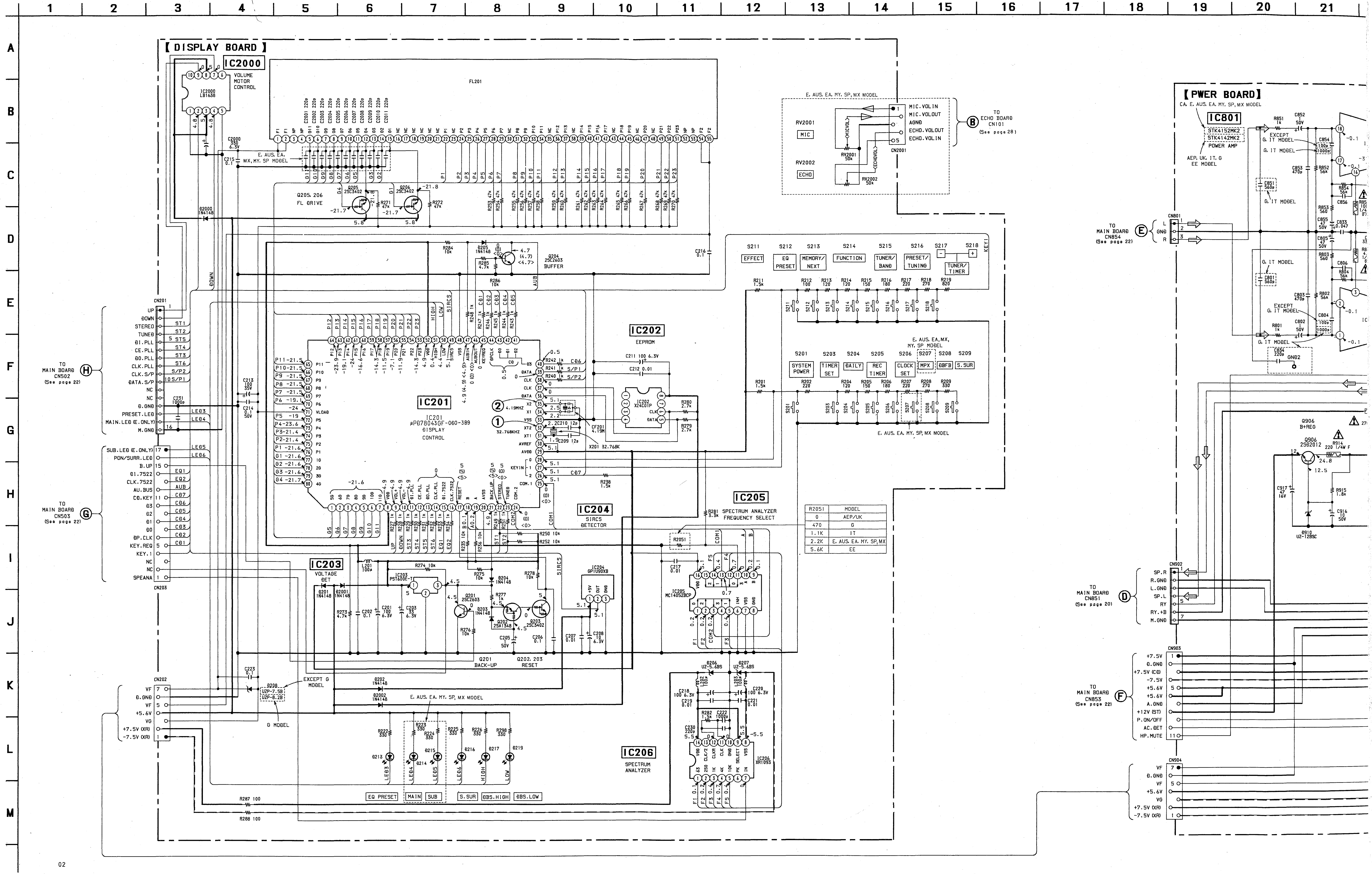
- CA : Canadian
- EA : Saudi Arabia
- EE : East European
- IT : Italian
- AUS : Australian
- G : German
- MA : Malaysia
- SP : Singapore
- MX : Mexican


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
G
H
I
TO MAIN BOARD (CN851) (See page 18)
【POWER BOARD】
【PS BOARD】
D951
R952
JW957
R951
CN951
C951
C952
JW958
JW959
JW960
JW961
JW962
JW952
JW953
PT951 POWER TRANSFORMER
AC IN
CN952
Canadian Model
R953
JW951
Canadian, AEP, AU Model
JW955
JW956
F951
FH911
FH912
F952
FH913
FH914
E,EA,MX,MY,SP Model
S951
220/240V
110/120V
1-651-089-
11
02
C901
C902
C906
C907
CN901
Q902
Q904
RED
WHI
BLU
ORG
RED
WHT
BLU
TO MAIN BOARD (CN503) (See page
【DISPLAY BOARD】
C213
C223
IC2000
E,AUS,EA,MX
TO MAIN BOARD (CN502) (See page 17)
CN201
FUNCTION
C231
MEMORY/ NEXT
TUNER/ TIMER
TUNER/ BAND
PRESET/ TUNING
D213
PRESET
HIGH
LOW
EQ PRES
DBFB
R213
R215
R216
R217
R283
D208
R219
JW201
JW202
JW203
JW204
JW205

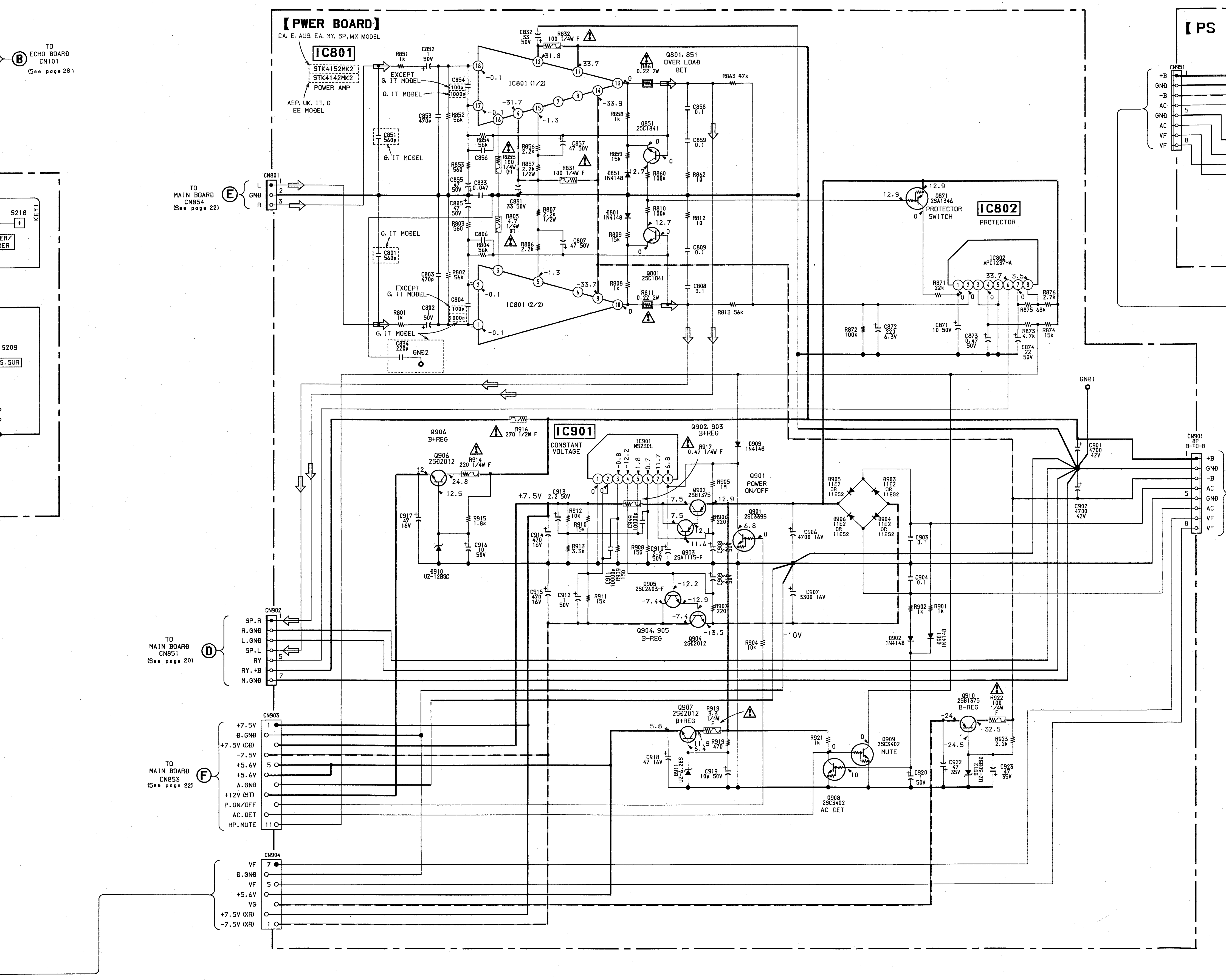
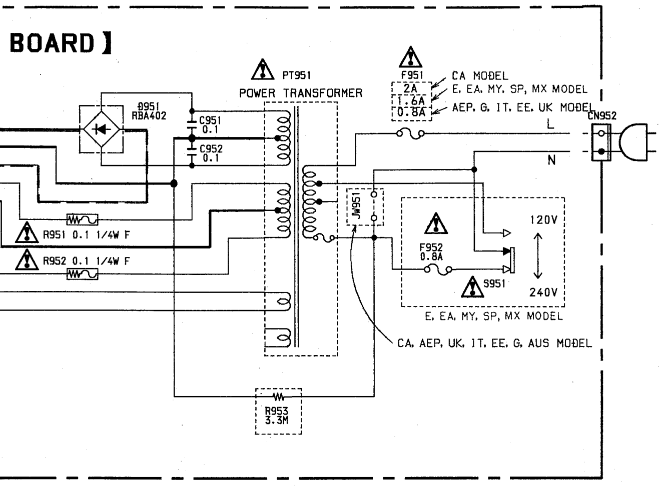
● Refer to page 35 for Semiconductor Lead Layouts.


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
【PS BOARD】
【POWER BOARD】
【DISPLAY BOARD】
TO MAIN BOARD (CN851) (See page 18)
H650M: EXCEPT AEP, UK, EE Model
G, IT Model
TO MAIN BOARD (CN853) (See page 17)
TO MAIN BOARD (CN854) (See page 17)
TO MAIN BOARD (CN503) (See page 18)
TO MAIN BOARD (CN502) (See page 17)
TO ECHO BOARD (CN101) (See page 32)
PT951 POWER TRANSFORMER
AC IN
CN952
F951
FH911
FH912
F952
FH913
FH914
S951
220/240V ⟷ 110/120V
E, EA, MX, MY, SP Model
Canadian Model
Canadian, AEP, AU Model
D951
CN951
1-651-089-
11
1-651-082-
11
1-651-083-
11
IC801
IC802
IC901
CN801
CN901
CN903
CN904
C901
C902
C906
C907
FL201 FLUORESCENT INDICATOR TUBE
IC201
IC202
IC205
IC206
IC2000
CN201
CN202
CN2001
CF201
E, AUS, EA, MX, MY, SP Model
FUNCTION
MEMORY/NEXT
TUNER/TIMER
TUNER/BAND
PRESET/TUNING
PRESET
HIGH
LOW
EQ PRESET
EFFECT
DBFB
MAIN
SUB
S-SUR
MPX
MIC
ECHO
RV2001
RV2002
CLOCK SET
REC TIMER
DAILY
TIMER SET
SYSTEM POWER

4-7. SCHEMATIC DIAGRAM – DISPLAY SECTION –

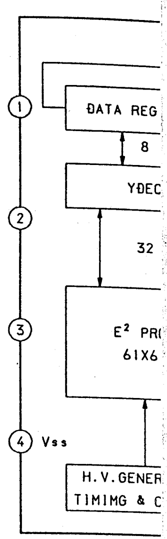

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
A
B
C
D
E
F
G
H
I
J
K
L
M
[DISPLAY BOARD]
IC2000
VOLUME MOTOR CONTROL
IC2000 LB1638
FL201
IC201
IC201 µPD78043GF-060-3B9 DISPLAY CONTROL
IC202
EEPROM
IC202 X24C01P
IC203
VOLTAGE DET
IC203 PST600E-T
IC204
SIRCS DETECTOR
IC204 GP1U90X8
IC205
SPECTRUM ANALYZER FREQUENCY SELECT
IC205 MC14052BCP
IC206
SPECTRUM ANALYZER
IC206 XR1093
Q205, 206 FL DRIVE
Q204 2SC2603 BUFFER
Q201 BACK-UP
Q202, 203 RESET
X201 32.768K
CF201 4.19M
32.768KHZ
4.19MHZ
E. AUS. EA, MY, SP, MX MODEL
E. AUS. EA. MX, MY. SP MODEL
RV2001
MIC
RV2002
ECHO
MIC.VOLIN
MIC.VOLOUT
AGND
ECHO.VOLOUT
ECHO.VOLIN
CN2001
TO ECHO BOARD CN101 (See page 28)
S211 EFFECT
S212 EQ PRESET
S213 MEMORY/NEXT
S214 FUNCTION
S215 TUNER/BAND
S216 PRESET/TUNING
S217 –
S218 +
TUNER/TIMER
S201 SYSTEM POWER
S203 TIMER SET
S204 DAILY
S205 REC TIMER
S206 CLOCK SET
S207 MPX
S208 DBFB
S209 S.SUR
KEY1
CN201
UP
DOWN
STEREO
TUNED
DI.PLL
CE.PLL
DO.PLL
CLK.PLL
CLK.S/P
DATA.S/P
NC
NC
D.GND
PRESET.LED
MAIN.LED (E. ONLY)
M.GND
TO MAIN BOARD CN502 (See page 22)
CN203
SUB.LED (E. ONLY)
PON/SURR.LED
B.UP
DI.7522
CLK.7522
AU.BUS
CD.KEY
D3
D2
D1
D0
DP.CLK
KEY.REQ
KEY.1
NC
NC
SPEANA
TO MAIN BOARD CN503 (See page 22)
CN202
VF
D.GND
VF
+5.6V
VG
+7.5V (XR)
-7.5V (XR)
EXCEPT G MODEL
G MODEL
LED3 EQ PRESET
LED4 MAIN
LED5 SUB
LED6 S.SUR
HIGH DBS.HIGH
LOW DBS.LOW
[PWER BOARD]
CA, E, AUS, EA, MY, SP, MX MODEL
IC801
STK4152MK2
STK4142MK2
POWER AMP
AEP, UK, IT, G EE MODEL
EXCEPT G, IT MODEL
G, IT MODEL
CN801
TO MAIN BOARD CN854 (See page 22)
Q906 B+REG
Q906 2SD2012
D910 UZ-12BSC
CN902
SP.R
R.GND
L.GND
SP.L
RY
RY.+B
M.GND
TO MAIN BOARD CN851 (See page 20)
CN903
+7.5V
D.GND
+7.5V (CD)
-7.5V
+5.6V
+5.6V
A.GND
+12V (ST)
P.ON/OFF
AC.DET
HP.MUTE
TO MAIN BOARD CN853 (See page 22)
CN904
VF
D.GND
VF
+5.6V
VG
+7.5V (XR)
-7.5V (XR)
02

R2051	MODEL
0	AEP/UK
470	G
1.1K	IT
2.2K	E. AUS. EA. MY. SP, MX
5.6K	EE



【PWER BOARD】
CA, E, AUS, EA, MY, SP, MX MODEL
IC801
STK4152MK2
STK4142MK2
POWER AMP
AEP, UK, IT, G
EE MODEL
IC801 (1/2)
IC801 (2/2)
EXCEPT G, IT MODEL
G, IT MODEL
Q801, 851
OVER LOAD DET
IC802
PROTECTOR
Q871 2SA1346 PROTECTOR SWITCH
IC802 μPC1237HA
IC901
CONSTANT VOLTAGE
IC901 M5230L
Q906 B+REG
Q902, 903 B+REG
Q901 POWER ON/OFF
Q904, 905 B-REG
Q907 2SB2012 B+REG
Q909 2SC3402 MUTE
Q908 2SC3402 AC DET
Q910 2SB1375 B-REG
GND1
GND2
TO ECHO BOARD CN101 (See page 28)
TO MAIN BOARD CN854 (See page 22)
CN801
L
GND
R
TO MAIN BOARD CN851 (See page 20)
CN902
SP.R
R.GND
L.GND
SP.L
RY
RY.+B
M.GND
TO MAIN BOARD CN853 (See page 22)
CN903
+7.5V
D.GND
+7.5V (CD)
-7.5V
+5.6V
+5.6V
A.GND
+12V (ST)
P.ON/OFF
AC.DET
HP.MUTE
CN904
VF
D.GND
VF
+5.6V
VG
+7.5V (XR)
-7.5V (XR)
CN901 8P B-TO-B
+B
GND
-B
AC
GND
AC
VF
VF
S218
S209
【PS BOARD】
CN951
+B
GND
-B
AC
GND
AC
VF
VF
PT951 POWER TRANSFORMER
F951
CA MODEL
E, EA, MY, SP, MX MODEL
AEP, G, IT, EE, UK MODEL
CN952
AC IN
L
N
120V
240V
S951
E, EA, MY, SP, MX MODEL
CA, AEP, UK, IT, EE, G, AUS MODEL
R951 0.1 1/4W F
R952 0.1 1/4W F
R953 3.3M

• IC BLOCK DI

IC202 X24C(


DATA REG
8
YDEC
32
E² PR
61X6
Vss
H.V.GENER
TIMING & C

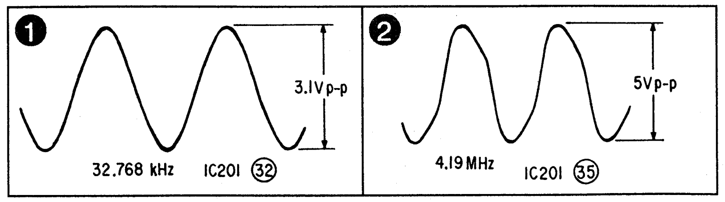
Note :

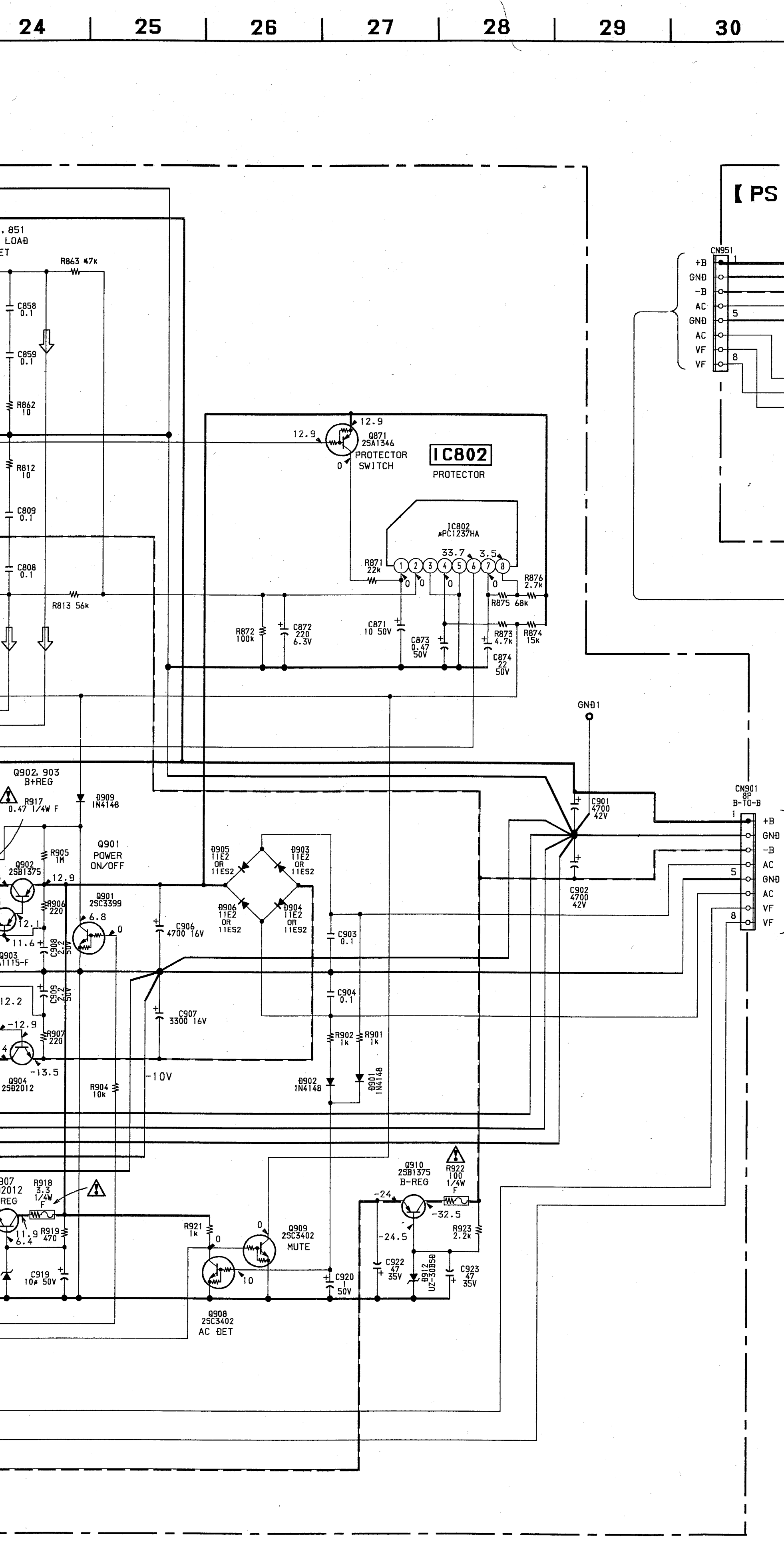
- All capacitors ar 50WV or less ar tantalums.
- All resistors are specified.
- % : indicates tol
- △ : internal co
- ▭ : nonfl
- ▭ : fusit

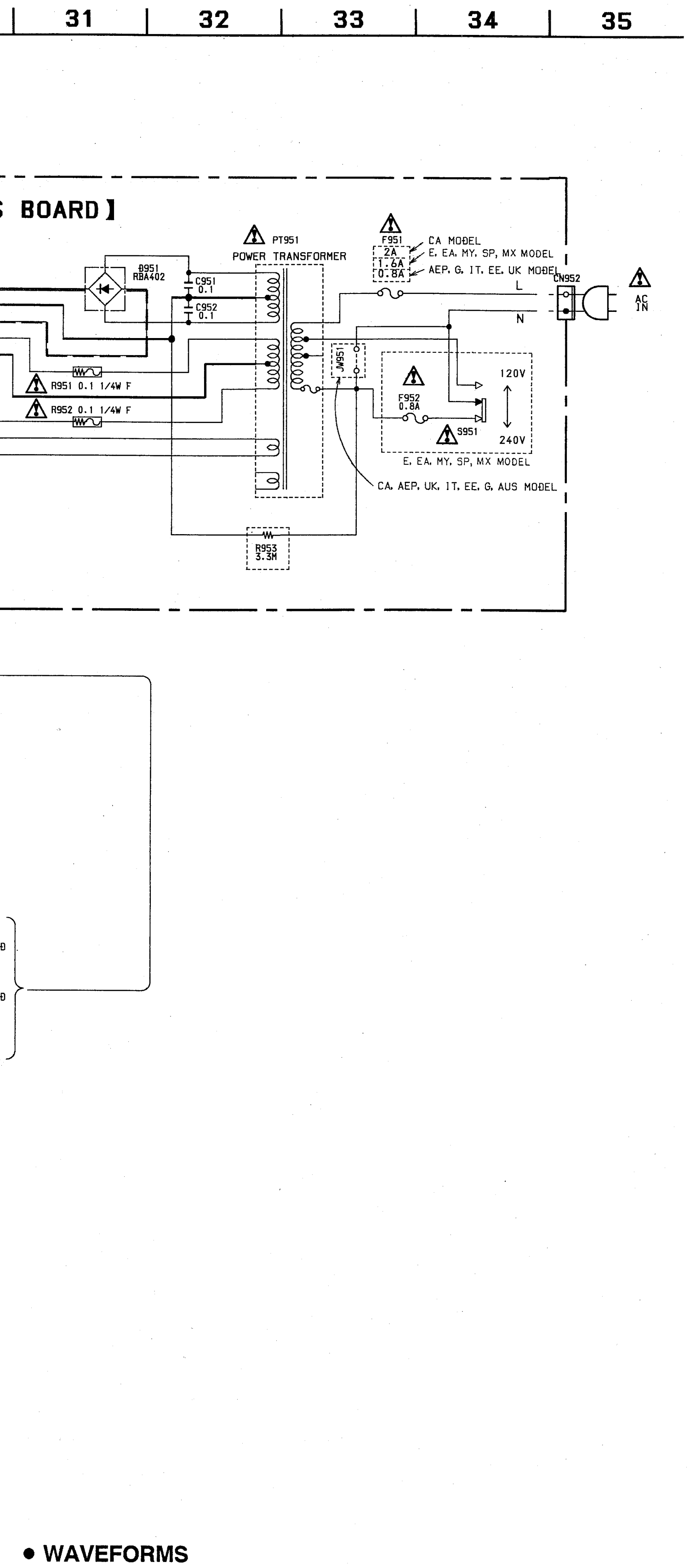
> **Note :**
> The components fied by mark ⚠ ted line with marl are critical for sat Replace only witl number specified

- ▬▬ : B+ Li
- ▬ ▬ ▬ : B – L
- Voltage and wav no-signal conditi
  no mark : FM (R
  no mark : PLAYI
- Voltages are tak Voltage variatior tolerances.
- Waveforms are t Voltage variatior tolerances.
- Circled numbers
- Signal path.
  ⇨ : FM
- CA : Canadian
  EA : Saudi Ara
  EE : East Euro
  IT : Italian
  AUS : Australiar
  G : German
  MA : Malaysia
  SP : Singapore
  MX : Mexican

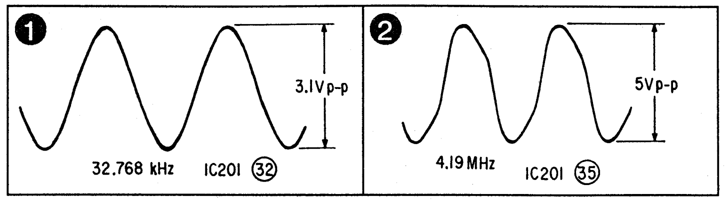
• WAVEFORMS




24
25
26
27
28
29
30
R863 47k
C858 0.1
C859 0.1
R862 10
R812 10
C809 0.1
C808 0.1
R813 56k
12.9
Q871 2SA1346 PROTECTOR SWITCH
IC802
PROTECTOR
IC802 μPC1237HA
33.7
3.5
R871 22k
R876 2.7k
R875 68k
R872 100k
C872 220 6.3V
C871 10 50V
C873 0.47 50V
R873 4.7k
R874 15k
C874 22 50V
GND1
Q902, 903 B+REG
R917 0.47 1/4W F
D909 1N4148
Q901 POWER ON/OFF
R905 1M
Q902 2SB1375
Q991 2SC5399
D905 11E2 OR 11ES2
D903 11E2 OR 11ES2
D906 11E2 OR 11ES2
D904 11E2 OR 11ES2
C906 4700 16V
C903 0.1
C904 0.1
C907 3300 16V
R902 1k
R901 1k
D902 1N4148
R904 10k
-10V
Q904 2SD2012
Q903
C901 4700 42V
C902 4700 42V
Q910 2SB1375 B-REG
R922 100 1/4W F
R923 2.2k
C922 47 35V
C923 47 35V
C920 50V
Q909 2SC3402 MUTE
Q908 2SC3402 AC DET
R921 1k
R918 3.3 1/4W F
R919 470
C919 10 50V


31
32
33
34
35
[PS BOARD]
PT951 POWER TRANSFORMER
D951 RBA402
C951 0.1
C952 0.1
F951 2A 1.6A 0.8A
CA MODEL
E, EA, MY, SP, MX MODEL
AEP, G, IT, EE, UK MODEL
CN951
CN952
AC IN
+B
GND
-B
AC
GND
AC
VF
VF
R951 0.1 1/4W F
R952 0.1 1/4W F
F952 0.8A
S951
120V
240V
E, EA, MY, SP, MX MODEL
CA, AEP, UK, IT, EE, G, AUS MODEL
R953 3.3M
CN901 8P B-TO-B
+B
GND
-B
AC
GND
AC
VF
VF

• WAVEFORMS



Note :

- All capacitors are in μ F unless otherwise noted. pF: μ μ F 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼W or less unless otherwise specified.
- % : indicates tolerance.
- △ : internal component.
- ▭ : nonflammable resistor.
- ▭ : fusible resistor.

Note :	Note :
The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- ▬ : B+ Line
- ▪ ▪ ▪ : B − Line
- Voltage and waveforms are dc with respect to ground under no-signal conditions.

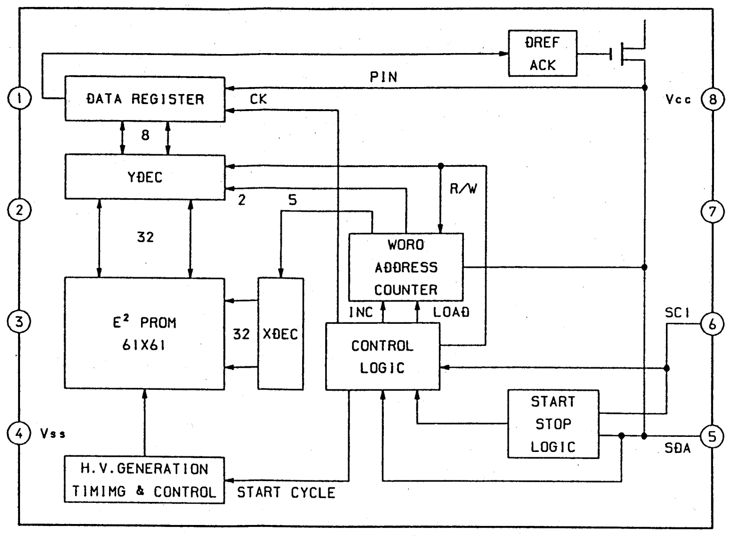
  no mark : FM (RADIO SECTION)
  no mark : PLAYBACK (AUDIO SECTION)
- Voltages are taken with a VOM (Input impedance 10M Ω). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.

  ⇨ : FM

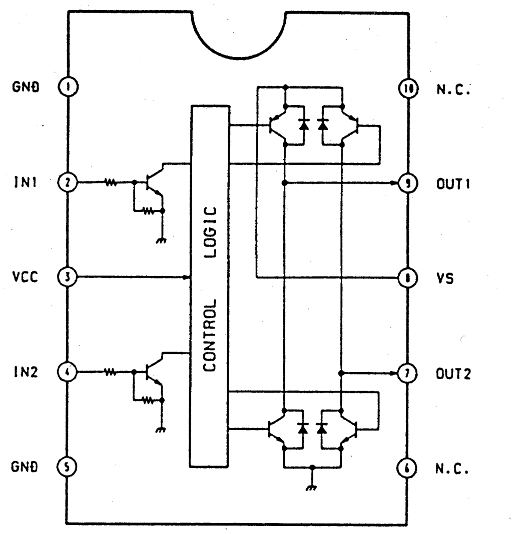
• CA	: Canadian
EA	: Saudi Arabia
EE	: East European
IT	: Italian
AUS	: Australian
G	: German
MA	: Malaysia
SP	: Singapore
MX	: Mexican

• IC BLOCK DIAGRAMS – DISPLAY SECTION –

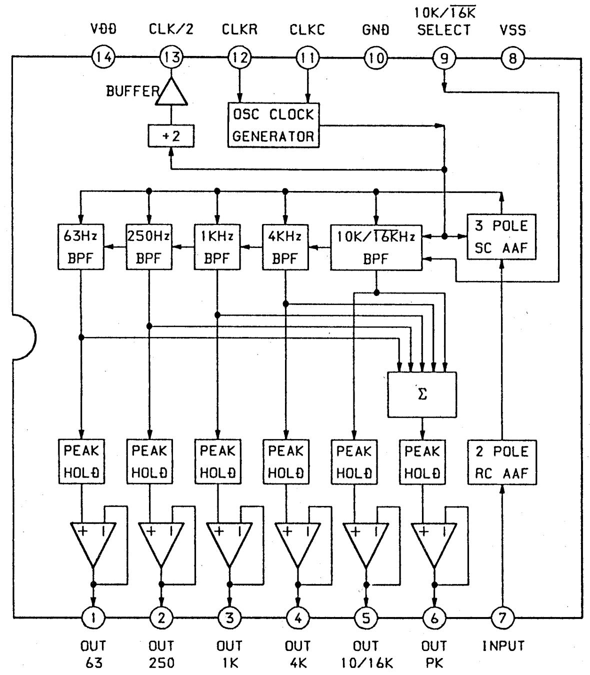
IC202 X24C01P


DREF
ACK
PIN
DATA REGISTER
CK
Vcc
8
YDEC
R/W
2
5
32
WORD ADDRESS COUNTER
INC
LOAD
E² PROM 61X61
32
XDEC
CONTROL LOGIC
SCl
START STOP LOGIC
Vss
H.V.GENERATION TIMING & CONTROL
START CYCLE
SDA
1
2
3
4
5
6
7
8

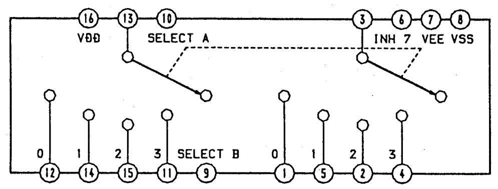
IC2000 LB1638


GND
IN1
VCC
IN2
GND
N.C.
OUT1
VS
OUT2
N.C.
CONTROL LOGIC
1
2
3
4
5
6
7
8
9
10

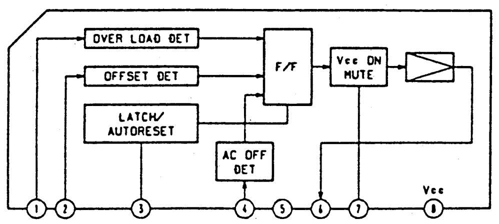
IC206 XR1093


VDD
CLK/2
CLKR
CLKC
GND
10K/16K SELECT
VSS
BUFFER
÷2
OSC CLOCK GENERATOR
63Hz BPF
250Hz BPF
1KHz BPF
4KHz BPF
10K/16KHz BPF
3 POLE SC AAF
Σ
PEAK HOLD
2 POLE RC AAF
OUT 63
OUT 250
OUT 1K
OUT 4K
OUT 10/16K
OUT PK
INPUT

IC205 MC14052BCP

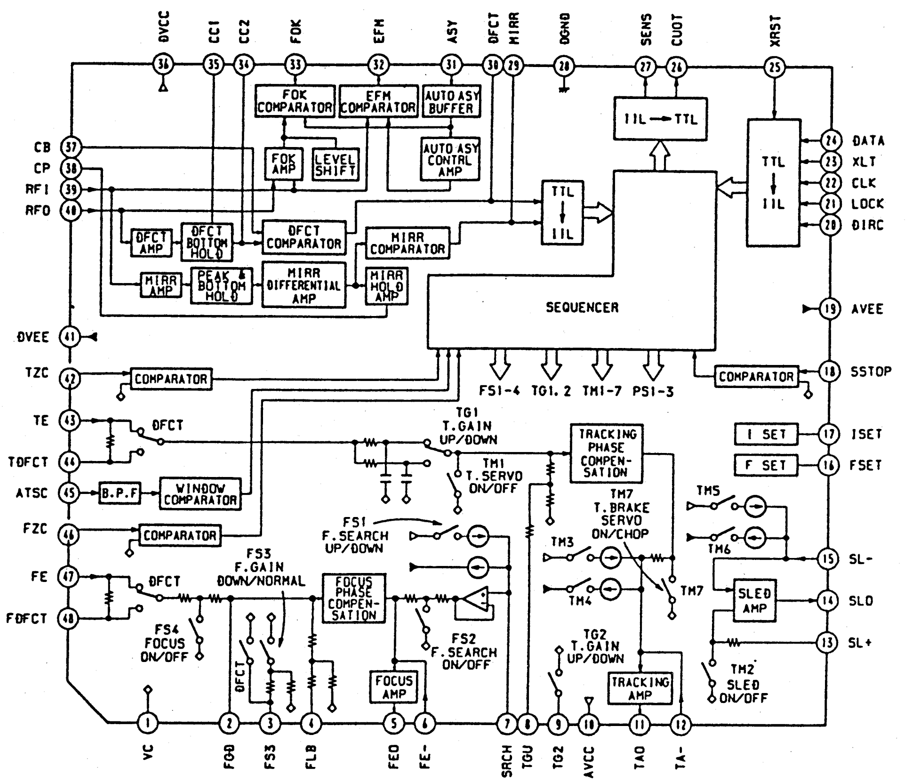

16
13
10
3
6
7
8
VDD
SELECT A
INH
7
VEE
VSS
0
1
2
3
SELECT B
12
14
15
11
9
1
5
2
4

IC802 μPC1237HA

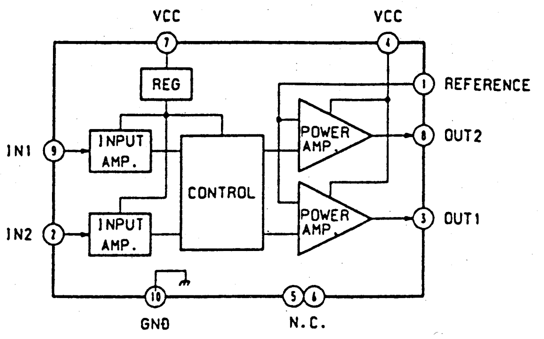

OVER LOAD DET
OFFSET DET
LATCH/ AUTORESET
F/F
Vcc ON MUTE
AC OFF DET
Vcc
1
2
3
4
5
6
7
8

• IC BLOCK DIAGRAMS – CD SECTION –

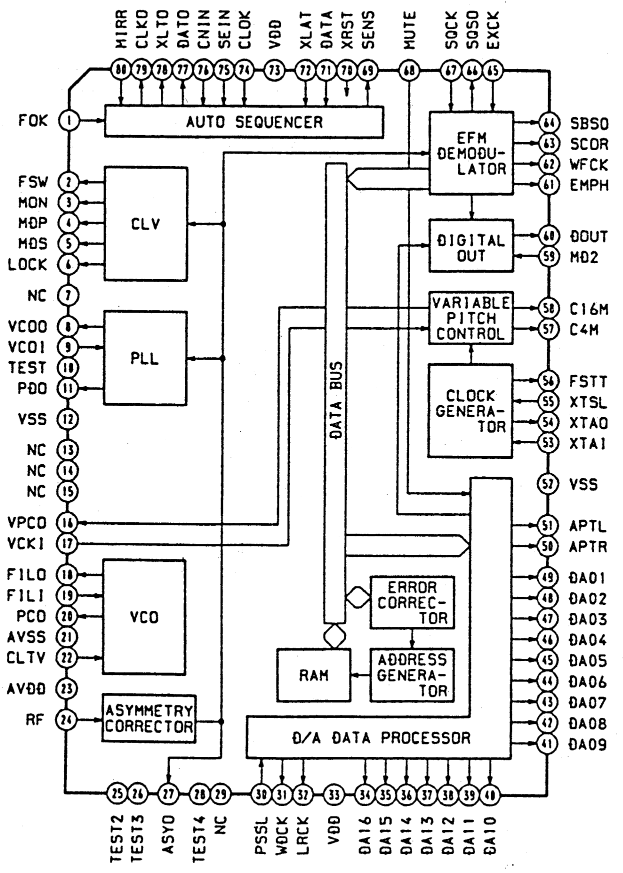
IC101 CXA1372AQ


DVCC
CC1
CC2
FOK
EFM
ASY
DFCT
MIRR
DGND
SENS
CUOT
XRST
CB
CP
RFI
RFO
FOK COMPARATOR
EFM COMPARATOR
AUTO ASY BUFFER
FOK AMP
LEVEL SHIFT
AUTO ASY CONTROL AMP
IIL → TTL
TTL → IIL
DFCT AMP
DFCT BOTTOM HOLD
DFCT COMPARATOR
MIRR COMPARATOR
MIRR AMP
PEAK & BOTTOM HOLD
MIRR DIFFERENTIAL AMP
MIRR HOLD AMP
SEQUENCER
DATA
XLT
CLK
LOCK
DIRC
AVEE
DVEE
TZC
COMPARATOR
SSTOP
FS1-4 TG1, 2 TM1-7 PS1-3
TE
DFCT
TG1 T.GAIN UP/DOWN
TM1 T.SERVO ON/OFF
TRACKING PHASE COMPEN-SATION
I SET
F SET
ISET
FSET
TDFCT
ATSC
B.P.F
WINDOW COMPARATOR
TM7 T.BRAKE SERVO ON/CHOP
TM5
FZC
FS1 F.SEARCH UP/DOWN
TM3
TM6
SL-
FS3 F.GAIN DOWN/NORMAL
FOCUS PHASE COMPEN-SATION
TM4
TM7
SLED AMP
SLO
FE
FDFCT
FS4 FOCUS ON/OFF
FS2 F.SEARCH ON/OFF
TG2 T.GAIN UP/DOWN
SL+
TM2 SLED ON/OFF
FOCUS AMP
TRACKING AMP
VC
FDO
FS3
FLB
FEO
FE-
SRCH
TGU
TG2
AVCC
TAO
TA-

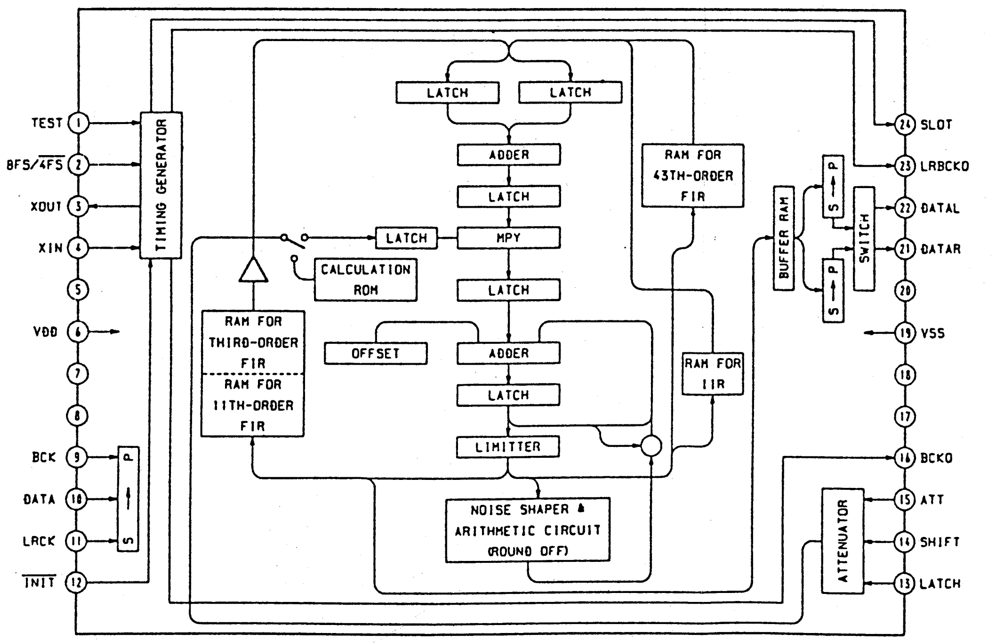
IC103 M54641FP


VCC
VCC
REG
REFERENCE
IN1
INPUT AMP.
CONTROL
POWER AMP.
OUT2
IN2
INPUT AMP.
POWER AMP.
OUT1
GND
N.C.

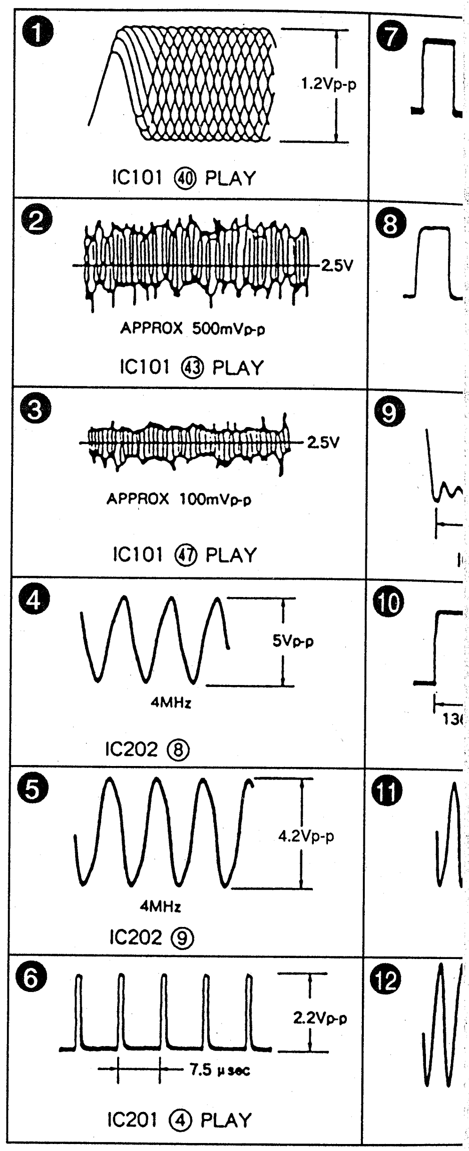
IC201 CXD2500BQ


MIRR
CLKO
XLTO
DATO
CNIN
SEIN
CLOK
VDD
XLAT
DATA
XRST
SENS
MUTE
SQCK
SQSO
EXCK
FOK
AUTO SEQUENCER
EFM DEMODU-LATOR
SBSO
SCOR
WFCK
EMPH
FSW
MON
MDP
MDS
LOCK
CLV
DIGITAL OUT
DOUT
MD2
NC
VCOO
VCOI
TEST
PDO
PLL
VARIABLE PITCH CONTROL
C16M
C4M
DATA BUS
CLOCK GENERA-TOR
FSTT
XTSL
XTAO
XTAI
VSS
NC
NC
NC
VSS
VPCO
VCKI
APTL
APTR
FILO
FILI
PCO
AVSS
CLTV
VCO
ERROR CORREC-TOR
DA01
DA02
DA03
DA04
DA05
DA06
DA07
DA08
DA09
RAM
ADDRESS GENERA-TOR
AVDD
RF
ASYMMETRY CORRECTOR
D/A DATA PROCESSOR
TEST2
TEST3
ASYO
TEST4
NC
PSSL
WDCK
LRCK
VDD
DA16
DA15
DA14
DA13
DA12
DA11
DA10

IC203 MSM6538-01GS-VKR1

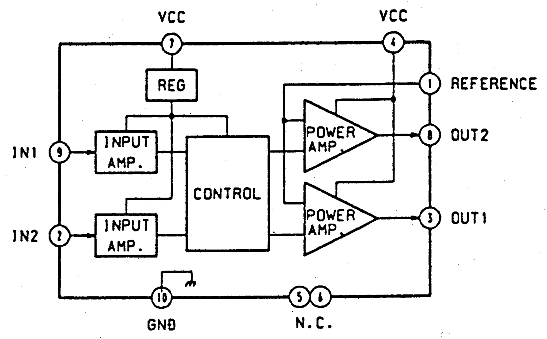

TEST
8FS/4FS
XOUT
XIN
VDD
BCK
DATA
LRCK
INIT
TIMING GENERATOR
LATCH
LATCH
ADDER
LATCH
LATCH
MPY
CALCULATION ROM
LATCH
RAM FOR THIRD-ORDER FIR
RAM FOR 11TH-ORDER FIR
OFFSET
ADDER
LATCH
LIMITTER
NOISE SHAPER & ARITHMETIC CIRCUIT (ROUND OFF)
RAM FOR 43TH-ORDER FIR
RAM FOR IIR
BUFFER RAM
SWITCH
S → P
S → P
P → S
ATTENUATOR
SLOT
LRBCKO
DATAL
DATAR
VSS
BCKO
ATT
SHIFT
LATCH

• WAVEFORMS

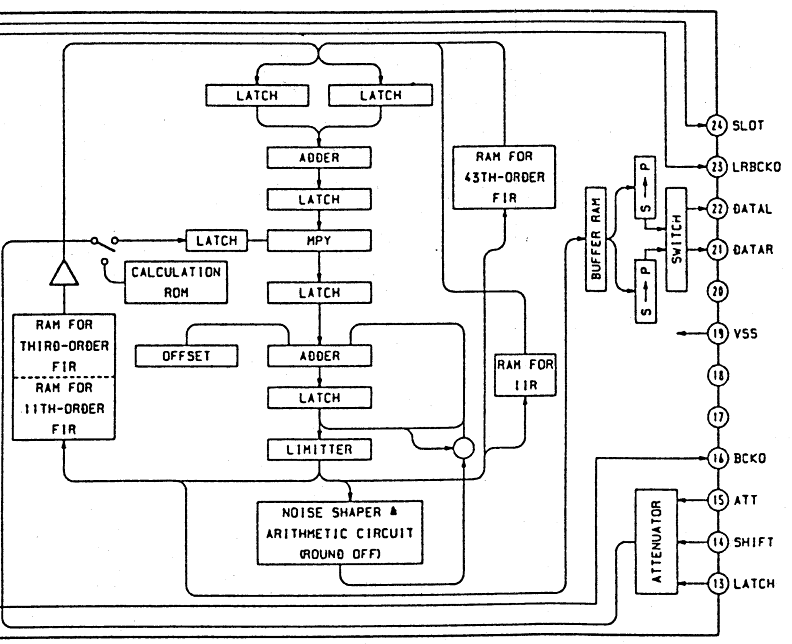


ATA
LT
LK
CK
RC
EE
STOP
SET
SET
-
O
+

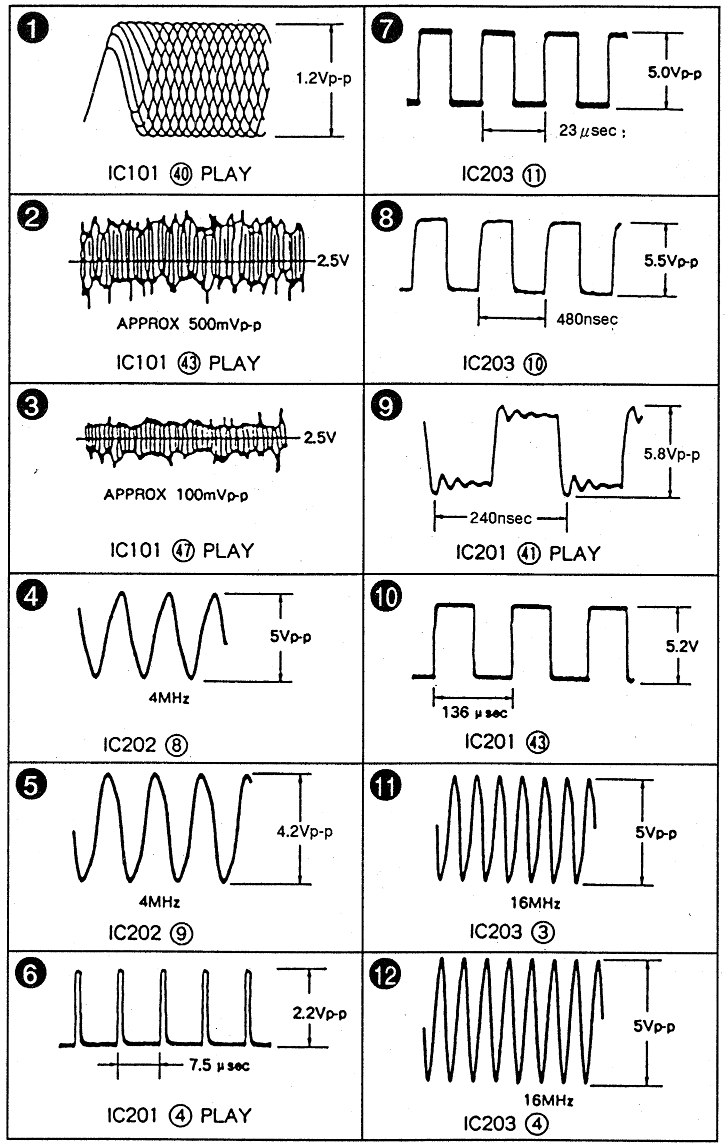
IC103 M54641FP


VCC
VCC
7
4
REG
1
REFERENCE
IN1
9
INPUT AMP.
CONTROL
POWER AMP
8
OUT2
IN2
2
INPUT AMP.
POWER AMP
3
OUT1
10
GND
5
6
N.C.

M6538-01GS-VKR1


LATCH
LATCH
ADDER
LATCH
LATCH
MPY
CALCULATION ROM
LATCH
OFFSET
ADDER
LATCH
LIMITTER
RAM FOR THIRD-ORDER FIR
RAM FOR 11TH-ORDER FIR
NOISE SHAPER & ARITHMETIC CIRCUIT (ROUND OFF)
RAM FOR 43TH-ORDER FIR
RAM FOR IIR
BUFFER RAM
S→P
P→S
SWITCH
ATTENUATOR
24 SLOT
23 LRBCKO
22 DATAL
21 DATAR
20
19 VSS
18
17
16 BCKO
15 ATT
14 SHIFT
13 LATCH

• WAVEFORMS



• SEMICONDUCTOR LOCATION

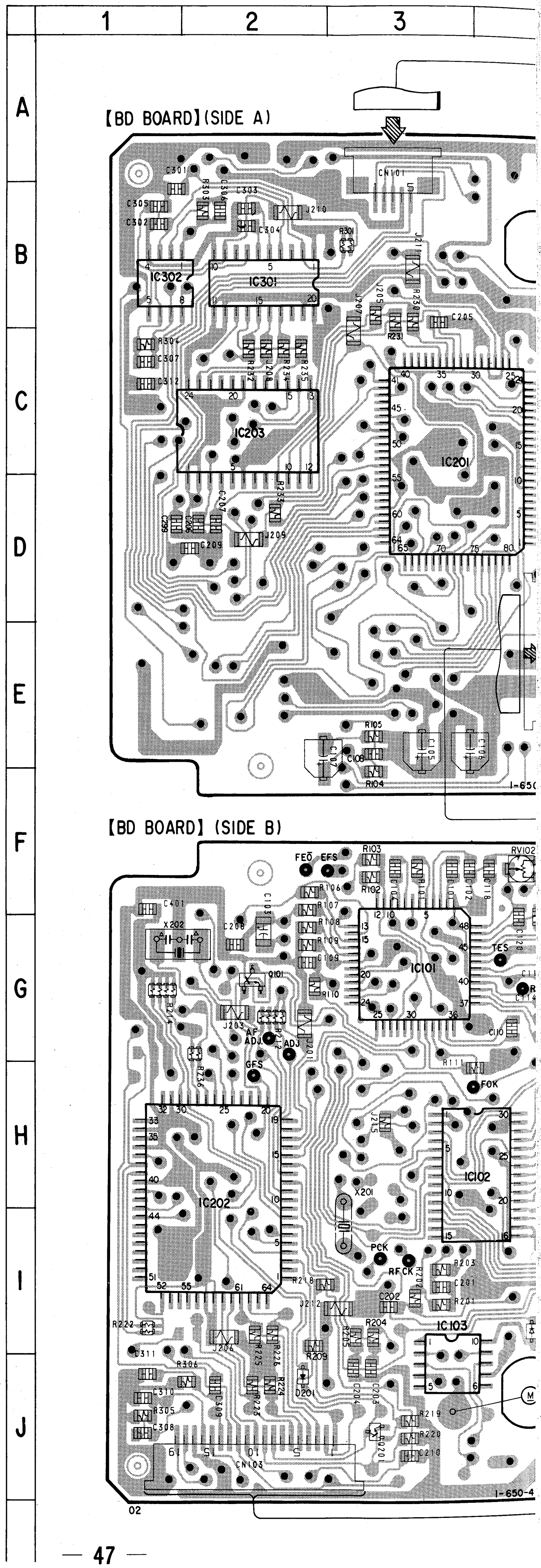
Ref. No.	Location
D101	I-4
D202	J-2
IC101	G-3
IC102	H-3
IC103	I-3
IC201	C-3
IC202	H-2
IC203	C-2
IC301	B-2
IC302	B-1
Q101	G-2
Q201	J-3

Note:

- ● : Through hole.
- ░ : Pattern of the rear side.
- ☐ : Chip components extracted from the rear side.

4-8. PRINTED WIRING BOARDS – CD SECTION –

• Ref

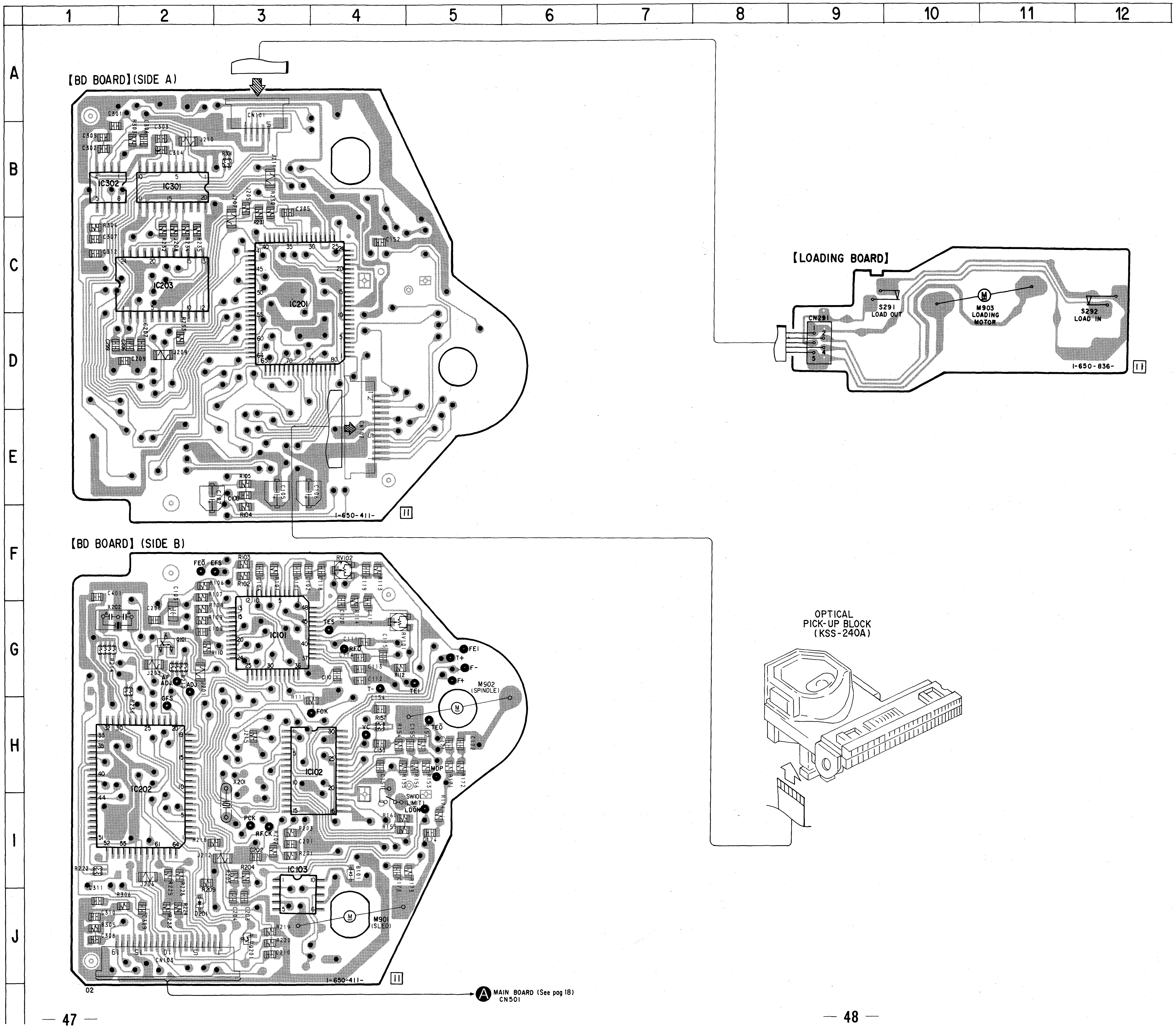

1
2
3
A
B
C
D
E
F
G
H
I
J
【BD BOARD】(SIDE A)
CN101
IC302
IC301
IC203
IC201
【BD BOARD】(SIDE B)
FEO
EFS
TES
IC101
X202
AF ADJ
GFS
FOK
IC202
IC102
X201
PCK
RFCK
IC103
CN103
1-650
1-650-4

4-8. PRINTED WIRING BOARDS – CD SECTION –

- Refer to page 35 for Semiconductor Lead Layouts.

• SEMICONDUCTOR LOCATION

Ref. No.	Location
D101	I-4
D202	J-2
IC101	G-3
IC102	H-3
IC103	I-3
IC201	C-3
IC202	H-2
IC203	C-2
IC301	B-2
IC302	B-1
Q101	G-2
Q201	J-3

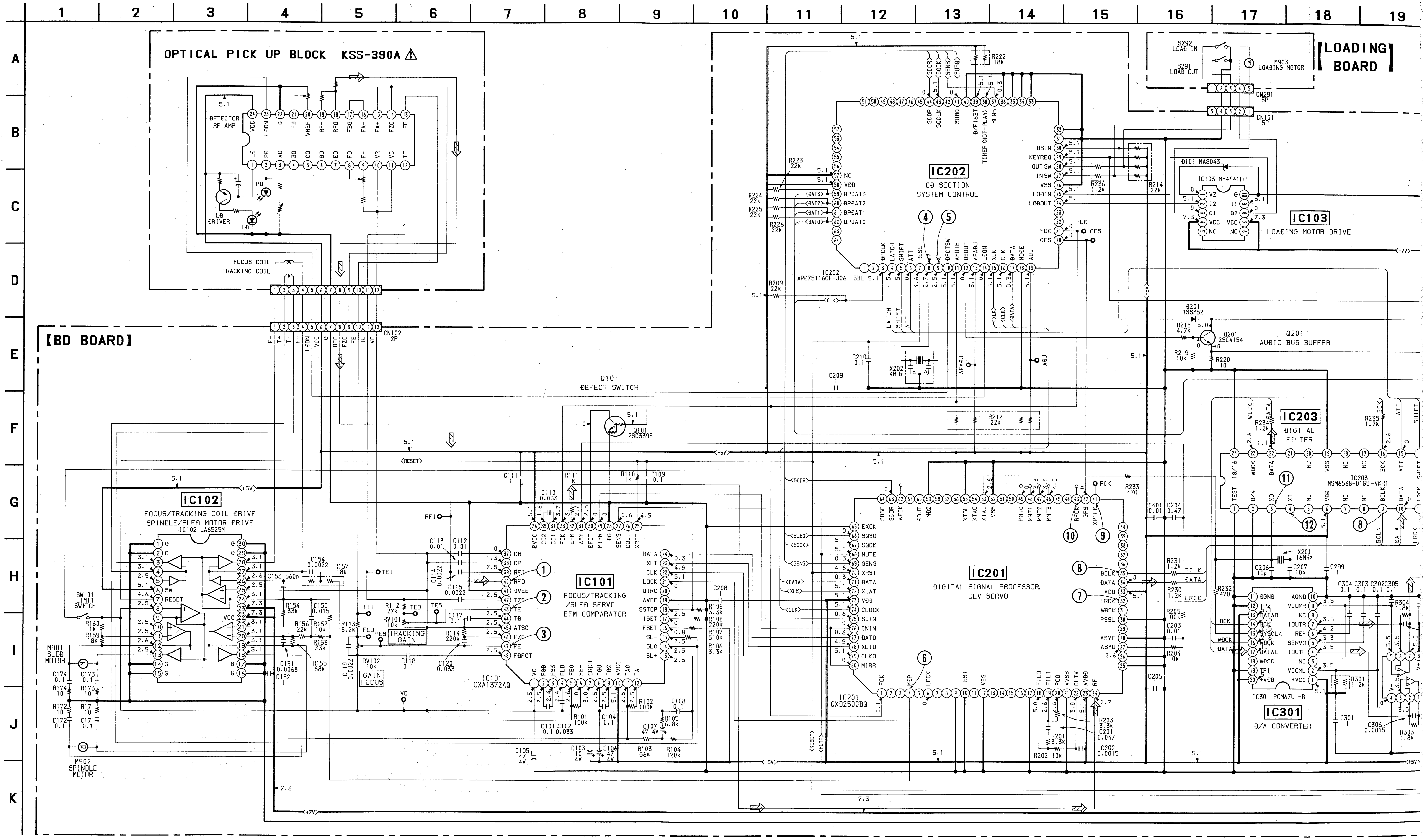

1
2
3
4
5
6
7
8
9
10
11
12
A
B
C
D
E
F
G
H
I
J
[BD BOARD] (SIDE A)
CN101
IC302
IC301
IC203
IC201
C301
C303
C304
C305
C307
C312
C205
C152
C209
C105
C106
C109
R301
R304
R105
R104
R231
J210
J209
1-650-411-
11
[LOADING BOARD]
CN291
S291 LOAD OUT
M903 LOADING MOTOR
S292 LOAD IN
1-650-836-
11
[BD BOARD] (SIDE B)
FEO
EFS
RV102
RV101
C401
X202
C208
Q101
J203
AF ADJ
ADJ
GFS
IC101
TES
REO
FE
T+
F-
F+
TEI
T-
M902 (SPINDLE)
FOK
VC
TEO
MDP
IC202
IC102
X201
SW101 (LIMIT)
LDON
PCK
RFCK
IC103
D201
M901 (SLED)
CN103
R222
C311
R306
C310
R305
C308
1-650-411-
11
02
OPTICAL PICK-UP BLOCK (KSS-240A)
A MAIN BOARD (See pag 18) CN501

Note:

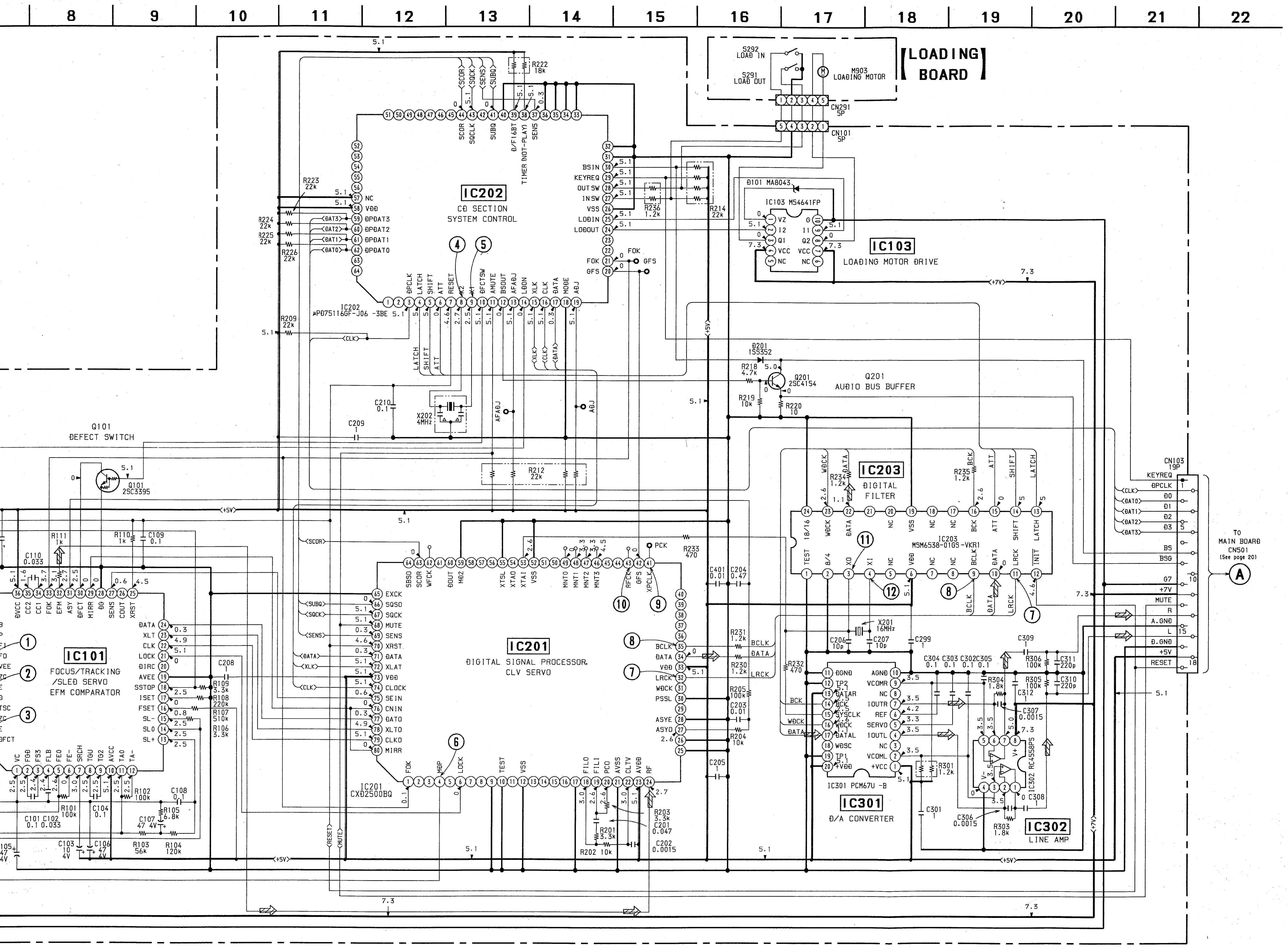
- ● : Through hole.
- ▨ : Pattern of the rear side.
- ☐ : Chip components extracted from the rear side.

4-9. SCHEMATIC DIAGRAM – CD SECTION –

- Refer to page 46 for Waveform.



OPTICAL PICK UP BLOCK KSS-390A
DETECTOR RF AMP
LD DRIVER
FOCUS COIL
TRACKING COIL
CN102 12P
【BD BOARD】
【LOADING BOARD】
S292 LOAD IN
S291 LOAD OUT
M903 LOADING MOTOR
CN291 5P
CN101 5P
IC202
CD SECTION SYSTEM CONTROL
IC202 μPD75116GF-J06 -3BE
IC103 M54641FP
IC103 LOADING MOTOR DRIVE
D101 MA8043
D201 1SS352
Q201 2SC4154
Q201 AUDIO BUS BUFFER
X202 4MHz
Q101 DEFECT SWITCH
Q101 2SC3395
IC102
FOCUS/TRACKING COIL DRIVE
SPINDLE/SLED MOTOR DRIVE
IC102 LA6525M
IC101
FOCUS/TRACKING /SLED SERVO EFM COMPARATOR
IC101 CXA1372AQ
TRACKING GAIN
GAIN FOCUS
RV101 10k
RV102 10k
IC201
DIGITAL SIGNAL PROCESSOR, CLV SERVO
IC201 CXD2500BQ
IC203
DIGITAL FILTER
IC203 MSM6538-01GS-VKR1
X201 16MHz
IC301
D/A CONVERTER
IC301 PCM67U -B
S101 LIMIT SWITCH
M901 SLED MOTOR
M902 SPINDLE MOTOR


8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
LOADING BOARD
S292 LOAD IN
S291 LOAD OUT
M903 LOADING MOTOR
CN291 5P
CN101 5P
IC202
CD SECTION SYSTEM CONTROL
IC202 μPD75116GF-J06-3BE
IC103
LOADING MOTOR DRIVE
IC103 M54641FP
D101 MA8043
Q201 AUDIO BUS BUFFER
Q201 2SC4154
D201 1SS352
X202 4MHz
Q101 DEFECT SWITCH
Q101 2SC3395
IC101
FOCUS/TRACKING /SLED SERVO EFM COMPARATOR
IC201 CXD2500BQ
IC201
DIGITAL SIGNAL PROCESSOR, CLV SERVO
IC203
DIGITAL FILTER
IC203 MSM6538-01GS-VKR1
X201 16MHz
IC301
D/A CONVERTER
IC301 PCM67U-B
IC302
LINE AMP
IC302 RC4558PS
CN103 19P
TO MAIN BOARD CN501 (See page 20)
A
KEYREQ
DPCLK
D0
D1
D2
D3
BS
BSG
G7
+7V
MUTE
R
A.GND
L
D.GND
+5V
RESET
7.3
5.1
(+5V)
(+7V)

Note :

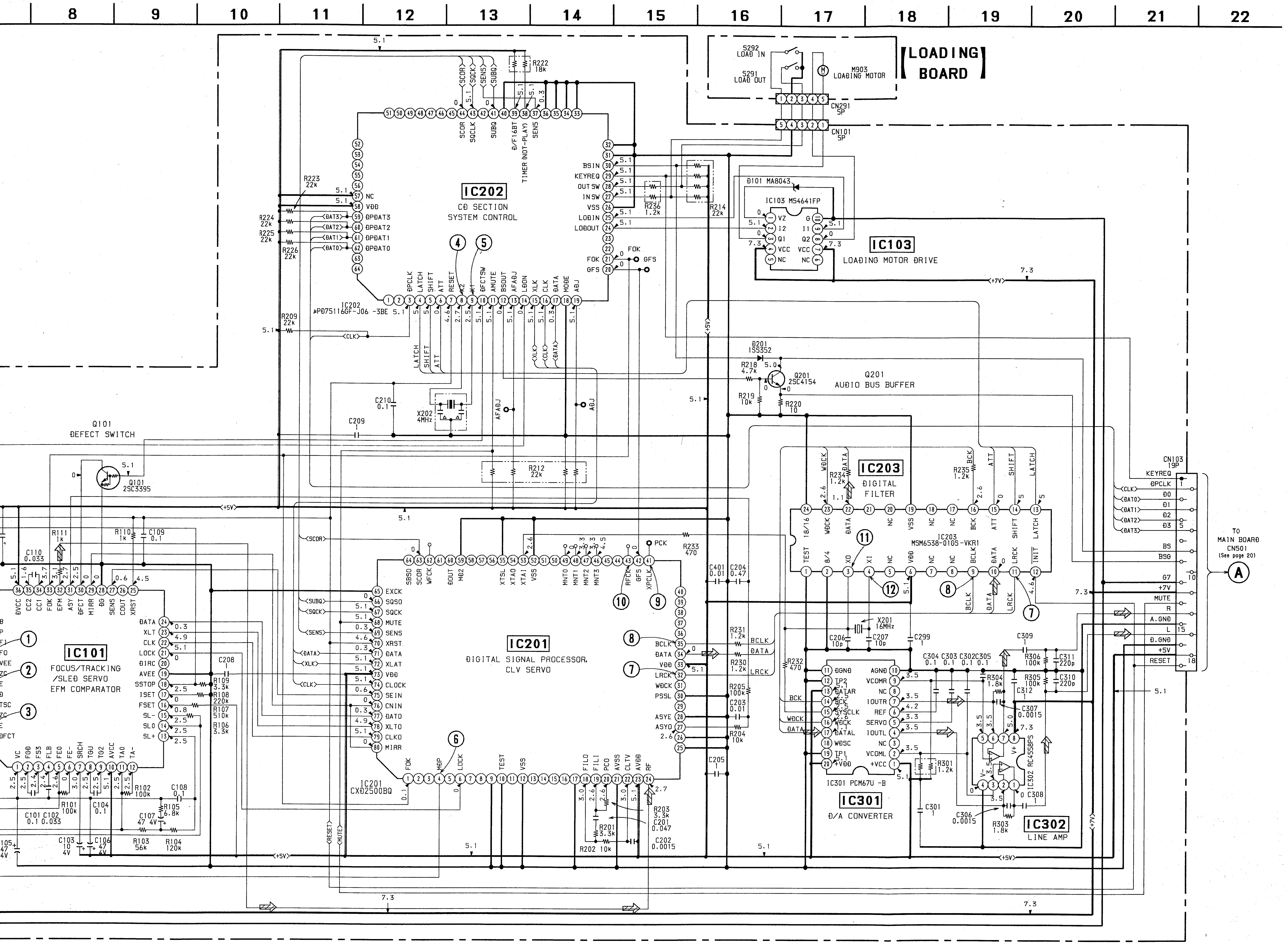
- All capacitors are in μ F unless otherwise noted. pF: μ μ F 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼W or less unless otherwise specified.
- % : indicates tolerance.
- △ : internal component.

Note :	Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- ▬▬ : B+ Line
- ▬ ▬ ▬ : B – Line
- ☐ : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal conditions.

  no mark : STOP
- Voltages are taken with a VOM (Input impedance 10M Ω). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.

  ⇨ : CD


8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
LOADING BOARD
S292 LOAD IN
S291 LOAD OUT
M903 LOADING MOTOR
CN291 5P
CN101 5P
IC202
CD SECTION SYSTEM CONTROL
IC202 μPD75116GF-J06 -3BE
IC103
LOADING MOTOR DRIVE
IC103 M54641FP
D101 MA8043
D201 1SS352
Q201 2SC4154
Q201 AUDIO BUS BUFFER
X202 4MHz
Q101 DEFECT SWITCH
Q101 2SC3395
IC101
FOCUS/TRACKING /SLED SERVO EFM COMPARATOR
IC201
DIGITAL SIGNAL PROCESSOR, CLV SERVO
IC201 CXD2500BQ
IC203
DIGITAL FILTER
IC203 MSM6538-01GS-VKR1
X201 16MHz
IC301
D/A CONVERTER
IC301 PCM67U -B
IC302
LINE AMP
IC302 RC4558PS
CN103 19P
KEYREQ
DPCLK
D0
D1
D2
D3
B5
BSG
G7
+7V
MUTE
R
A.GND
L
D.GND
+5V
RESET
TO MAIN BOARD CN501 (See page 20)
A

Note :

- All capacitors are in μ F unless otherwise noted. pF: μ μ F 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼W or less unless otherwise specified.
- % : indicates tolerance.
- △ : internal component.

Note :	Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- ▬▬ : B+ Line
- ▬ ▬ ▬ : B − Line
- ☐ : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal conditions.

  no mark : STOP
- Voltages are taken with a VOM (Input impedance 10M Ω). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.

  ⇨ : CD

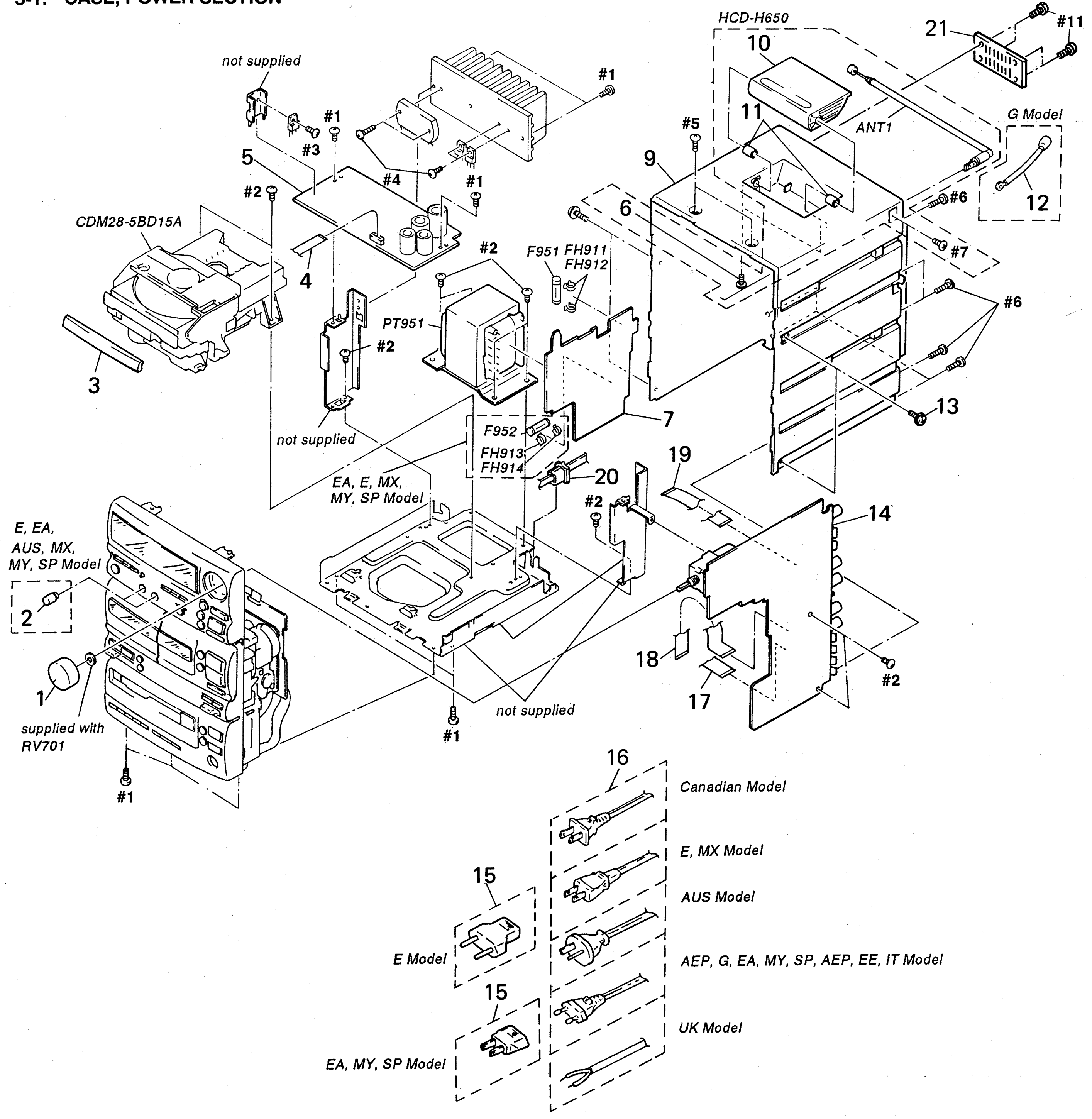
SECTION 5
EXPLODED VIEWS

NOTE :
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Color indication of Appearance Parts
  Example :
  KNOB, BALANCE (WHITE)....(RED)
  ↑ ↑
  Parts color Cabinet's color
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.
- AUS : Australian
  G : German
  IT : Italian
  MX : Mexican
  EA : Saudi Arabia
  EE : East European
  MY : Malaysia
  SP : Singapore

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

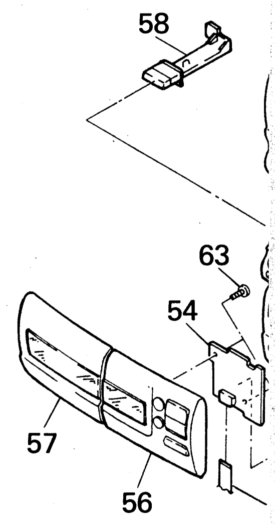
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

5-1. CASE, POWER SECTION



Ref. No.	Part No.	Description	Remark
1	4-964-858-01	KNOB (V)	
2	4-963-744-01	KNOB(E, AUS, EA, MX, MY, SP)	
3	4-963-286-11	PANEL, LOADING	
4	1-751-965-21	WIRE (FLAT TYPE) (7 CORE)	
* 5	A-4365-992-A	POWER BOARD, COMPLETE(Canadian)	
* 5	A-4369-000-A	POWER BOARD, COMPLETE(AEP, EE)	
* 5	A-4369-008-A	POWER BOARD, COMPLETE(G, IT)	
* 5	A-4369-020-A	POWER BOARD, COMPLETE(UK)	
* 5	A-4369-044-A	POWER BOARD, COMPLETE(E, AUS, EA, MX, MY, SP)	
6	4-951-620-01	SCREW (2.6X8), +BVTP	
* 7	1-651-089-11	PS BOARD	
* 9	4-963-306-31	CASE(H650M)	
* 9	4-964-234-01	CASE (FH)(E, EA, MX, MY, SP)	
* 9	4-964-234-11	CASE (FH)(H650:AEP, G)	
* 9	4-964-234-21	CASE (FH)(AUS)	
* 10	4-963-673-01	HANDLE(H650)	
* 11	4-963-672-01	COLLAR(H650)	
12	1-501-594-21	ANTENNA (FM)(G)	
13	3-704-366-01	SCREW (CASE) (M3X8)	
* 14	A-4365-991-A	MAIN BOARD, COMPLETE(Canadian)	
* 14	A-4365-999-A	MAIN BOARD, COMPLETE(AEP)	
* 14	A-4369-007-A	MAIN BOARD, COMPLETE(G, IT)	
* 14	A-4369-019-A	MAIN BOARD, COMPLETE(UK)	
* 14	A-4369-043-A	MAIN BOARD, COMPLETE(E, AUS, EA, MX, MY, SP)	
* 14	A-4369-056-A	MAIN BOARD, COMPLETE(EE)	
⚠15	1-569-007-11	ADAPTER, CONVERSION 2P(E)	
⚠15	1-569-008-11	ADAPTER, CONVERSION 2P(EA, MY, SP)	
⚠16	1-575-651-11	CORD, POWER(AEP, EA, MY, SP, EE)	
⚠16	1-575-653-11	CORD, POWER(E, MX)	
⚠16	1-590-042-11	CORD, POWER (WITH CORE)(G, IT)	
⚠16	1-690-609-11	CORD, POWER(Canadian)	
⚠16	1-696-570-21	CORD, POWER(UK)	
⚠16	1-696-848-21	CORD, POWER(AUS)	
17	1-751-960-21	WIRE (FLAT TYPE) (19 CORE)	
18	1-765-142-21	WIRE (FLAT TYPE) (17 CORE)	
19	1-751-962-11	WIRE (FLAT TYPE) (11 CORE)	
* 20	3-703-244-00	BUSHING (2104), CORD(EXCEPT E, MX)	
* 20	3-703-571-11	BUSHING (S) (4516), CORD(E, MX)	
21	4-966-056-01	SHEET, PROTECTION (FH)(AEP, MX, MY, SP)	
ANT1	1-501-321-51	ANTENNA, TELESCOPIC(H650)	
⚠F951	1-532-215-00	FUSE(T800mA/250V)(EXCEPT Canadian)	
⚠F951	1-576-104-11	FUSE(2A/250V)(Canadian)	
⚠F952	1-532-259-00	FUSE(T1.6A/250V)(E, EA, MX, MY, SP)	
* FH911	1-533-293-11	FUSE HOLDER	
* FH912	1-533-293-11	FUSE HOLDER	
* FH913	1-533-293-11	FUSE HOLDER(E, EA, MX, MY, SP)	
* FH914	1-533-293-11	FUSE HOLDER(E, EA, MX, MY, SP)	
⚠PT951	1-423-966-11	TRANSFORMER, POWER(Canadian)	
⚠PT951	1-423-967-11	TRANSFORMER, POWER(AEP, G, IT, EE)	
⚠PT951	1-423-968-11	TRANSFORMER, POWER(AUS, UK)	
⚠PT951	1-423-969-11	TRANSFORMER, POWER(E, EA, MX, MY, SP)	

5-2. FRONT PANEL

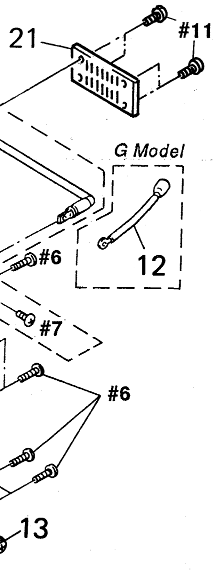


Ref. No.	Part No.
51	X-4944-408-
51	X-4944-409-
51	X-4944-433-
51	X-4944-436-
52	4-930-336-8
53	4-964-315-1
* 54	1-651-088-1
55	1-751-964-1
56	X-4944-411-
57	X-4944-410-
58	4-965-452-0
* 59	4-932-810-1
60	4-963-277-1
* 61	A-4365-998-
* 61	A-4369-006-
* 61	A-4369-014-
* 61	A-4369-026-
* 61	A-4369-050-
* 61	A-4369-052-

identified by
d line with mark
r safety.
th part number

dentifiés par une
critiques pour la

r que par une
uméro spécifié.

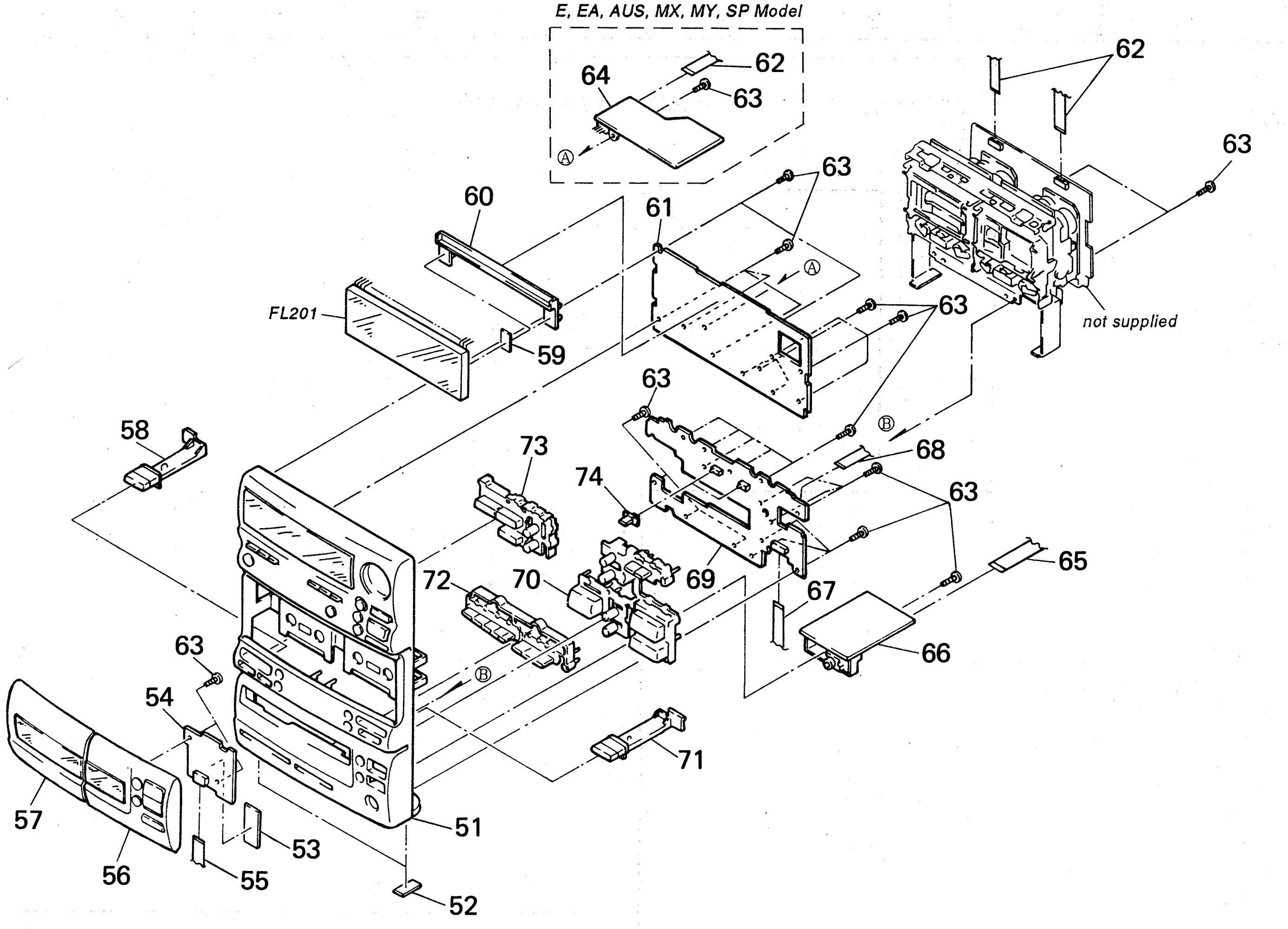


del

Ref. No.	Part No.	Description	Remark
1	4-964-858-01	KNOB (V)	
2	4-963-744-01	KNOB(E, AUS, EA, MX, MY, SP)	
3	4-963-286-11	PANEL, LOADING	
4	1-751-965-21	WIRE (FLAT TYPE) (7 CORE)	
* 5	A-4365-992-A	POWER BOARD, COMPLETE(Canadian)	
* 5	A-4369-000-A	POWER BOARD, COMPLETE(AEP, EE)	
* 5	A-4369-008-A	POWER BOARD, COMPLETE(G, IT)	
* 5	A-4369-020-A	POWER BOARD, COMPLETE(UK)	
* 5	A-4369-044-A	POWER BOARD, COMPLETE(E, AUS, EA, MX, MY, SP)	
6	4-951-620-01	SCREW (2.6X8), +BVTP	
* 7	1-651-089-11	PS BOARD	
* 9	4-963-306-31	CASE(H650M)	
* 9	4-964-234-01	CASE (FH)(E, EA, MX, MY, SP)	
* 9	4-964-234-11	CASE (FH)(H650:AEP, G)	
* 9	4-964-234-21	CASE (FH)(AUS)	
* 10	4-963-673-01	HANDLE(H650)	
* 11	4-963-672-01	COLLAR(H650)	
12	1-501-594-21	ANTENNA (FM)(G)	
13	3-704-366-01	SCREW (CASE) (M3X8)	
* 14	A-4365-991-A	MAIN BOARD, COMPLETE(Canadian)	
* 14	A-4365-999-A	MAIN BOARD, COMPLETE(AEP)	
* 14	A-4369-007-A	MAIN BOARD, COMPLETE(G, IT)	
* 14	A-4369-019-A	MAIN BOARD, COMPLETE(UK)	
* 14	A-4369-043-A	MAIN BOARD, COMPLETE(E, AUS, EA, MX, MY, SP)	
* 14	A-4369-056-A	MAIN BOARD, COMPLETE(EE)	

Ref. No.	Part No.	Description	Remark
⚠15	1-569-007-11	ADAPTER, CONVERSION 2P(E)	
⚠15	1-569-008-11	ADAPTER, CONVERSION 2P(EA, MY, SP)	
⚠16	1-575-651-11	CORD, POWER(AEP, EA, MY, SP, EE)	
⚠16	1-575-653-11	CORD, POWER(E, MX)	
⚠16	1-590-042-11	CORD, POWER (WITH CORE)(G, IT)	
⚠16	1-690-609-11	CORD, POWER(Canadian)	
⚠16	1-696-570-21	CORD, POWER(UK)	
⚠16	1-696-848-21	CORD, POWER(AUS)	
17	1-751-960-21	WIRE (FLAT TYPE) (19 CORE)	
18	1-765-142-21	WIRE (FLAT TYPE) (17 CORE)	
19	1-751-962-11	WIRE (FLAT TYPE) (11 CORE)	
* 20	3-703-244-00	BUSHING (2104), CORD(EXCEPT E, MX)	
* 20	3-703-571-11	BUSHING (S) (4516), CORD(E, MX)	
21	4-966-056-01	SHEET, PROTECTION (FH)(AEP, MX, MY, SP)	
ANT1	1-501-321-51	ANTENNA, TELESCOPIC(H650)	
⚠F951	1-532-215-00	FUSE(T800mA/250V)(EXCEPT Canadian)	
⚠F951	1-576-104-11	FUSE(2A/250V)(Canadian)	
⚠F952	1-532-259-00	FUSE(T1.6A/250V)(E, EA, MX, MY, SP)	
* FH911	1-533-293-11	FUSE HOLDER	
* FH912	1-533-293-11	FUSE HOLDER	
* FH913	1-533-293-11	FUSE HOLDER(E, EA, MX, MY, SP)	
* FH914	1-533-293-11	FUSE HOLDER(E, EA, MX, MY, SP)	
⚠PT951	1-423-966-11	TRANSFORMER, POWER(Canadian)	
⚠PT951	1-423-967-11	TRANSFORMER, POWER(AEP, G, IT, EE)	
⚠PT951	1-423-968-11	TRANSFORMER, POWER(AUS, UK)	
⚠PT951	1-423-969-11	TRANSFORMER, POWER(E, EA, MX, MY, SP)	

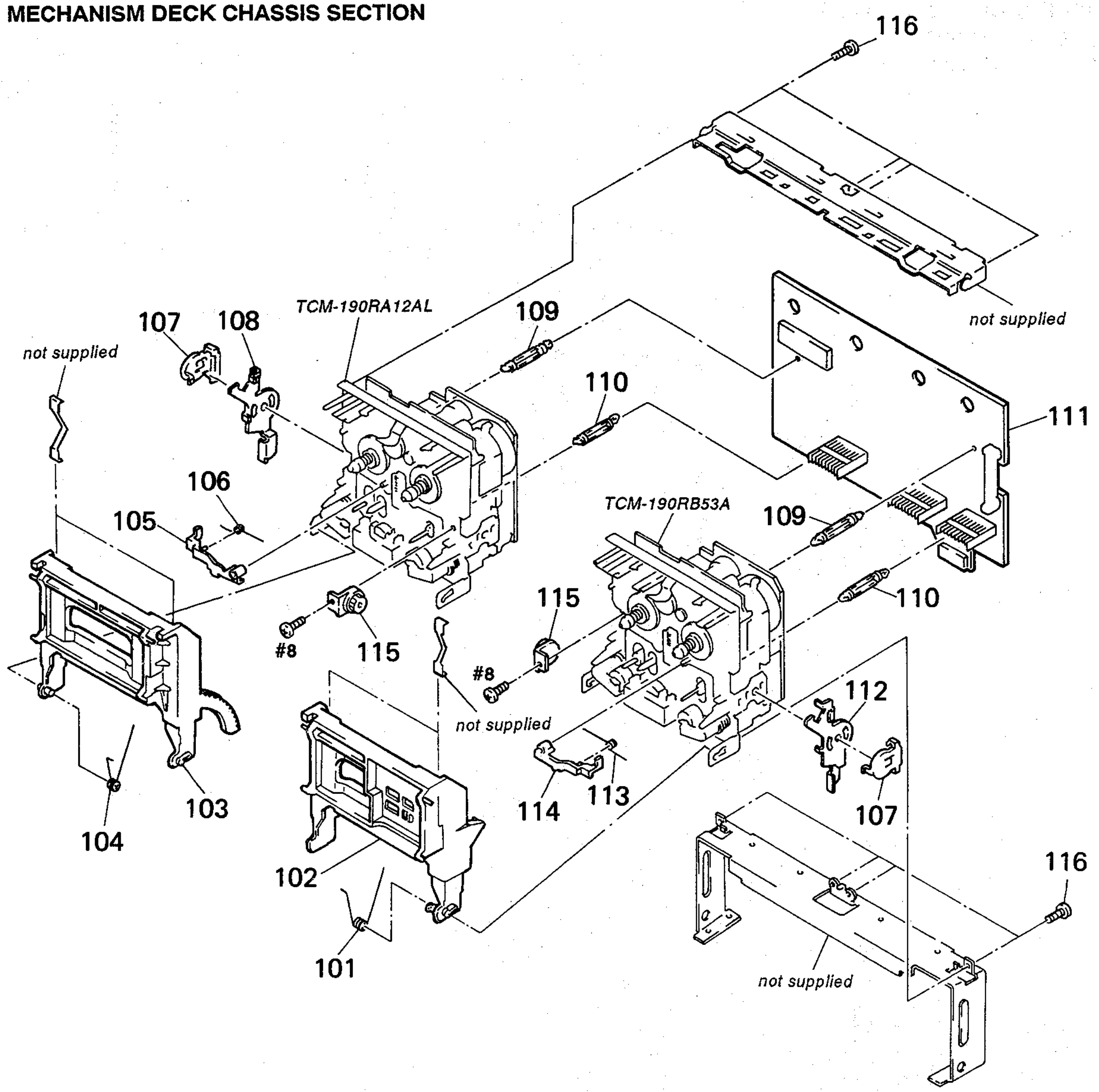
5-2. FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remark
51	X-4944-408-1	PANEL ASSY, FRONT(E, AUS, EA, MX, MY, SP)	
51	X-4944-409-1	PANEL ASSY, FRONT(H650:AEP, G)	
51	X-4944-433-1	PANEL ASSY, FRONT(Canadian)	
51	X-4944-436-1	PANEL ASSY, FRONT(H650M:AE, UK, IT, EE)	
52	4-930-336-81	FOOT (FELT)	
53	4-964-315-11	SHEET, PROTECTION	
* 54	1-651-088-11	TC-SW BOARD	
55	1-751-964-11	WIRE (FLAT TYPE) (7 CORE)	
56	X-4944-411-1	LID (B) ASSY, CASSETTE	
57	X-4944-410-1	LID (A) ASSY, CASSETTE	
58	4-965-452-01	BUTTON (E) (L)	
* 59	4-932-810-11	CUSHION (FL)	
60	4-963-277-11	HOLDER (FL)	
* 61	A-4365-998-A	DISPLAY BOARD, COMPLETE(Canadian)	
* 61	A-4369-006-A	DISPLAY BOARD, COMPLETE(AEP)	
* 61	A-4369-014-A	DISPLAY BOARD, COMPLETE(G)	
* 61	A-4369-026-A	DISPLAY BOARD, COMPLETE(UK)	
* 61	A-4369-050-A	DISPLAY BOARD, COMPLETE (E, AUS, EA, MX, MY, SP)	
* 61	A-4369-052-A	DISPLAY BOARD, COMPLETE(IT)	

Ref. No.	Part No.	Description	Remark
* 61	A-4369-057-A	DISPLAY BOARD, COMPLETE(EE)	
62	1-590-241-11	WIRE, FLAT TYPE (7 CORE)	
63	4-951-620-01	SCREW (2.6X8), +BVTP	
* 64	A-4369-051-A	ECHO BOARD, COMPLETE(E, AUS, EA, MX, MY, SP)	
65	1-751-961-21	WIRE (FLAT TYPE) (9 CORE)	
* 66	1-651-085-11	JACK BOARD	
67	1-751-963-11	WIRE (FLAT TYPE) (18 CORE)	
68	1-751-964-11	WIRE (FLAT TYPE) (7 CORE)	
* 69	A-4365-995-A	SW BOARD, COMPLETE(Canadian)	
* 69	A-4369-003-A	SW BOARD, COMPLETE(AEP, EE)	
* 69	A-4369-011-A	SW BOARD, COMPLETE(G, IT)	
* 69	A-4369-023-A	SW BOARD, COMPLETE(UK)	
* 69	A-4369-047-A	SW BOARD, COMPLETE(E, AUS, EA, MX, MY, SP)	
70	X-4944-435-1	BUTTON (M2) ASSY	
71	4-965-453-01	BUTTON (E) (R)	
72	4-963-655-01	BUTTON (CDP)	
73	X-4944-434-1	BUTTON (M1) ASSY	
74	4-963-284-11	KNOB (S)	
FL201	1-517-247-11	INDICATOR TUBE, FLUORESCENT	

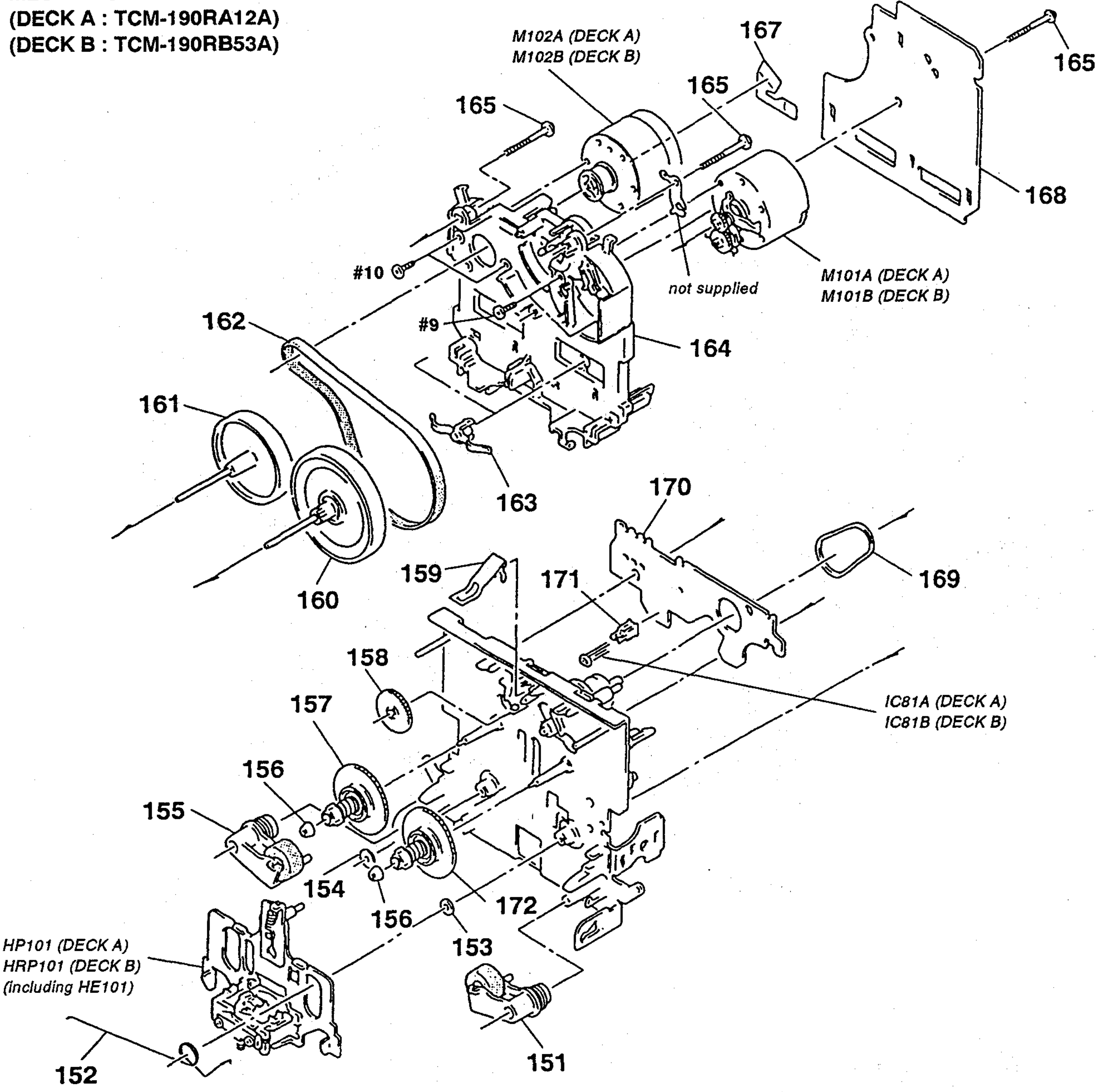
5-3. MECHANISM DECK CHASSIS SECTION


116
TCM-190RA12AL
107
108
not supplied
109
110
not supplied
111
106
105
TCM-190RB53A
109
115
110
#8
115
#8
112
not supplied
103
114
113
107
104
116
102
not supplied
101

Ref. No.	Part No.	Description	Remark
101	4-959-232-11	SPRING (R), TORSION	
102	X-4944-416-1	HOLDER (R) ASSY, CASSETTE	
103	X-4944-415-1	HOLDER (L) ASSY, CASSETTE	
104	4-959-231-11	SPRING (L), TORSION	
105	3-354-955-01	LEVER (EJ SAFTY LEVER L)	
106	3-354-961-01	SPRING (EJ SAFTY SPRING L)	
107	3-354-957-01	JOINT (LOCK LEVER)	
* 108	3-367-709-21	LEVER (LOCK LEVER L)	
* 109	4-965-065-11	HOLDER, PCB	
* 110	4-965-065-01	HOLDER, PCB	

Ref. No.	Part No.	Description	Remark
* 111	A-4365-994-A	TC BOARD, COMPLETE(Canadian)	
* 111	A-4369-002-A	TC BOARD, COMPLETE(AEP, EE)	
* 111	A-4369-010-A	TC BOARD, COMPLETE(G, IT)	
* 111	A-4369-022-A	TC BOARD, COMPLETE(UK)	
* 111	A-4369-046-A	TC BOARD, COMPLETE(E, AUS, EA, MX, MY, SP)	
* 112	3-367-710-21	LEVER (LOCK LEVER R)	
113	3-354-962-01	SPRING (EJ SAFTY SPRING R)	
114	3-354-956-01	LEVER (EJ SAFTY LEVER R)	
115	3-354-963-01	DAMPER	
116	4-951-620-01	SCREW +BVTP 2.6×8	

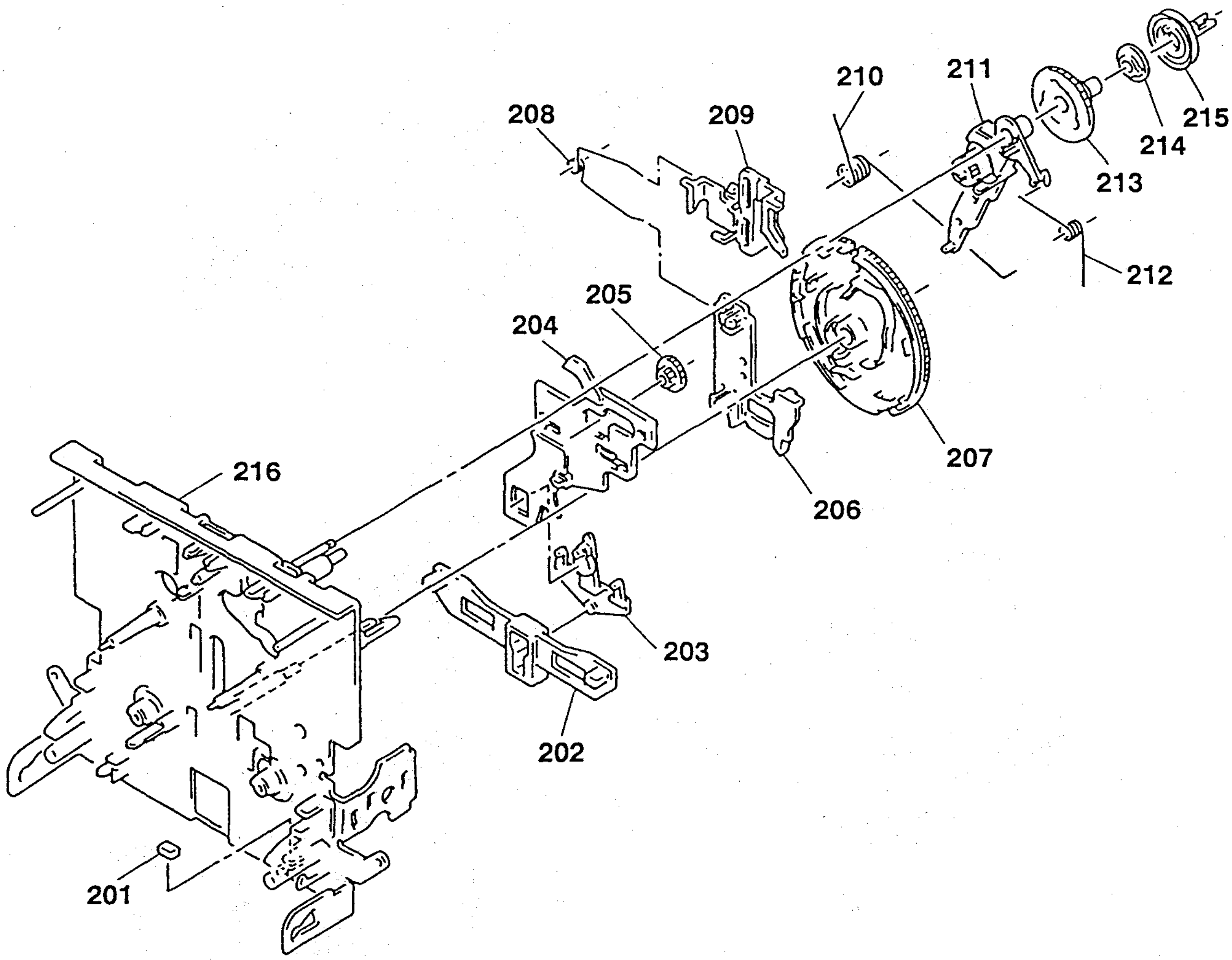
5-4. MECHANISM DECK SECTION-1
(DECK A : TCM-190RA12A)
(DECK B : TCM-190RB53A)


M102A (DECK A)
M102B (DECK B)
167
165
165
165
168
#10
not supplied
M101A (DECK A)
M101B (DECK B)
162
#9
164
161
163
170
169
159
171
160
158
IC81A (DECK A)
IC81B (DECK B)
157
156
155
154
172
156
153
HP101 (DECK A)
HRP101 (DECK B)
(including HE101)
152
151

Ref. No.	Part No.	Description	Remark
151	X-3366-047-1	LEVER (PINCH F) ASSY	
152	3-907-362-11	SPRING, TORSION	
153	3-356-713-01	WASHER	
154	3-356-714-01	WASHER	
155	X-3366-048-1	LEVER (PINCH R) ASSY	
156	3-913-841-01	CAP (REEL)	
157	X-3366-971-1	TABLE ASSY (B), REEL	
158	3-359-424-11	GEAR (REV GEAR)	
159	3-359-430-01	SPRING(CASSETTE RETAINER),LEAF	
160	X-3367-629-1	FLYWHEEL (FWD) ASSY	
161	X-3367-630-2	FLYWHEEL (REV) ASSY	
162	3-359-417-01	BELT (FLAT), CAPSTAN	
163	3-575-321-00	RETAINER, THRUST, CAPSTAN	
164	3-359-436-11	BASE (THRUST RETAINER),FITTING	
165	3-359-414-01	SCREW (+PTPWH 2X23)	

Ref. No.	Part No.	Description	Remark
167	1-638-983-11	PC BOARD, MOTOR FLEXIBLE	
* 168	A-2006-623-A	MD(AX)BOARD, COMPLETE (DECK A)	
* 168	A-2007-134-A	MD(BX)BOARD, COMPLETE (DECK B)	
169	3-359-466-11	BELT (FR), SQUARE	
170	1-638-020-11	SW-A BOARD(DECK A)	
170	1-638-020-11	SW-B BOARD(DECK B)	
171	3-343-419-01	HOLDER(S SENSOR A)	
172	X-3366-970-1	TABLE ASSY, REEL	
M101A	X-3363-501-1	MOTOR ASSY(REEL)(DECK A)	
M101B	X-3363-501-1	MOTOR ASSY(REEL)(DECK B)	
M102A	X-3365-377-1	MOTOR ASSY(CAPSTAN)(DECK A)	
M102B	X-3365-377-1	MOTOR ASSY(CAPSTAN)(DECK B)	
HP101	A-2003-757-A	BASE ASSY, HEAD(DECK A)	
HRP101	A-2003-930-A	BASE ASSY, HEAD(DECK B)	

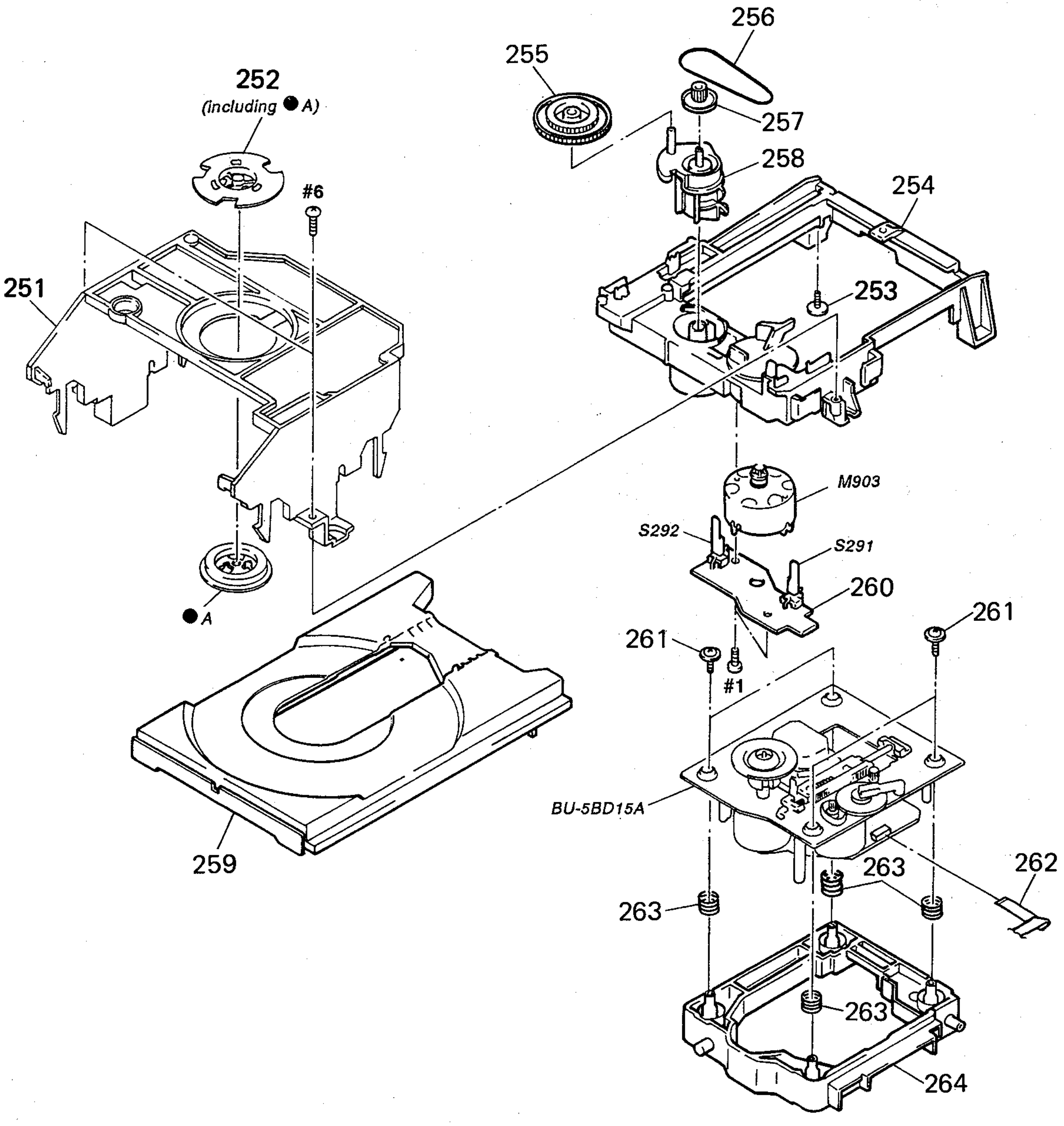
5-5. MECHANISM DECK SECTION-2
(DECK A : TCM-190RA12A)
(DECK B : TCM-190RB53A)



Ref. No.	Part No.	Description	Remark
201	3-359-469-01	SPACER	
* 202	3-359-425-01	SLIDER (REVERSE SLIDER)	
203	3-359-426-01	LEVER (REVERSE LEVER)	
* 204	3-359-415-01	SLIDER (TRIGGER SLIDER)	
204	3-359-415-11	SLIDER (TRIGGER SLIDER)	
205	3-359-448-11	GEAR (TRIGGER)	
* 206	3-359-427-01	SLIDER (LEVERSE SLIDER)	
207	3-359-420-11	GEAR (CAM GEAR)	
208	3-359-454-01	SPRING, TORSION	

Ref. No.	Part No.	Description	Remark
209	3-359-429-01	SLIDER (BRAKE PLATE)	
210	3-359-456-01	SPRING(TRIGGER SPRING), TORSION	
211	X-3366-569-1	ARM ASSY, FR	
212	3-359-453-01	SPRING (FR ARM), TORSION	
213	3-359-419-11	GEAR (FR GEAR)	
214	3-359-421-11	CLUTCH (REEL DISK)	
215	3-359-418-11	PULLEY (FR PULLEY)	
216	X-3359-415-1	CHASSIS ASSY, MECHANICAL(DECK A)	
216	X-3363-790-1	CHASSIS ASSY, MECHANICAL(DECK B)	

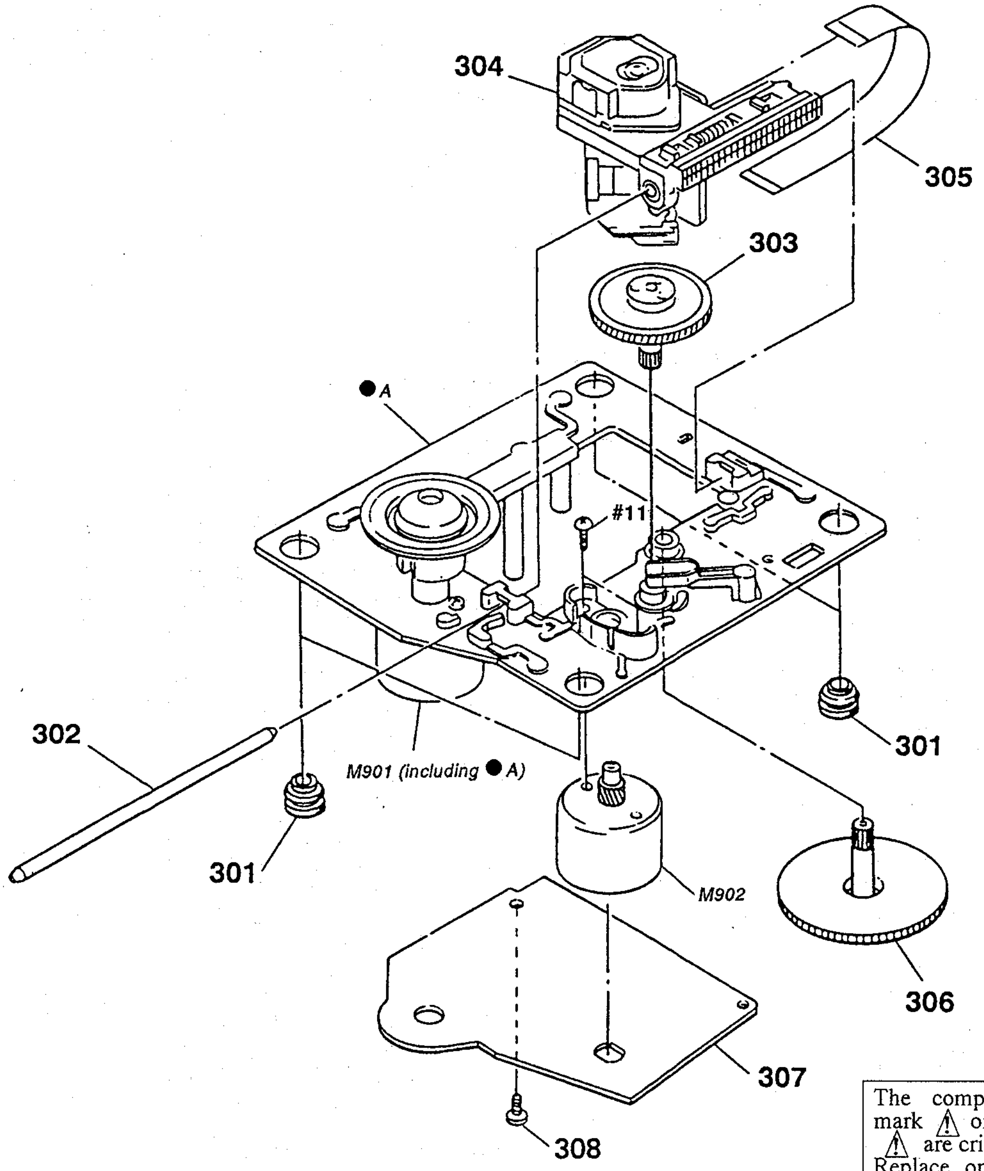
5-6. CD MECHANISM SECTION-1 (CDM-28-5BD15)


256
255
252
(including ● A)
257
258
254
#6
251
253
M903
S292
S291
260
●A
261
261
#1
BU-5BD15A
259
263
262
263
263
264

Ref. No.	Part No.	Description	Remark
251	4-960-835-01	HOLDER (M)	
252	1-452-719-11	MAGNET ASSY	
* 253	4-917-583-21	BRACKET, YOKE	
254	4-960-838-01	BASE (MD)	
255	4-960-842-01	GEAR (P)	
256	4-927-649-01	BELT	
257	4-960-841-01	PULLEY (S)	
* 258	4-960-839-01	CAM	
259	4-960-836-01	TABLE, DISK	

Ref. No.	Part No.	Description	Remark
* 260	1-650-836-11	LOADING BOARD	
261	4-933-134-01	SCREW (+PTPWH M2.6X6)	
262	1-751-806-11	WIRE (FLAT TYPE) (5 CORE)	
263	4-959-996-01	SPRING (932), COMPRESSION	
264	4-960-834-01	HOLDER (BU)	
M903	A-4604-363-A	MOTOR (L) ASSY	
S291	1-572-086-11	SWITCH, LEAF(LOAD OUT)	
S292	1-572-086-11	SWITCH, LEAF(LOAD IN)	

5-7. CD MECHANISM SECTION-2
(BU-5BD15A)



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
301	4-951-940-01	INSULATOR (BU)	
302	4-917-565-01	SHAFT, SLED	
303	4-917-567-01	GEAR (M)	
⚠304	8-848-144-11	DEVICE, OPTICAL KSS-240A	
305	1-575-001-11	WIRE, FLAT TYPE (12 CORE)	
306	4-917-564-01	GEAR (P), FLATNESS	
* 307	A-4673-132-A	BD (A) BOARD, COMPLETE	
308	4-951-620-01	SCREW (2.6X8), +BVTP	
M901	X-4917-504-1	MOTOR ASSY(SLED)	
M902	X-4917-523-1	MOTOR ASSY(SPINDLE)	

SECTION 6
ELECTRICAL PARTS LIST

BD(A)

NOTE :
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL : Metal-film resistor
  METAL OXIDE : Metal oxide-film resistor
  F : nonflammable

- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u : μ , for example :
  uA.... : μ A.... , uPA.... : μ PA....
  uPB.... : μ PB.... , uPC.... : μ PC....
  uPD.... : μ PD....
- CAPACITORS
  uF : μ F
- COILS
  uH : μ H
- AUS : Australian
  G : German
  IT : Italian
  MX : Mexican
  EA : Saudi Arabia
  EE : Easc European
  MY : Malaysia
  SP : Singapore

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
*	A-4673-132-A	BD (A) BOARD, COMPLETE			
		**********************			
		< CAPACITOR >			
C101	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C102	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C103	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C104	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C105	1-126-607-11	ELECT CHIP	47uF	20%	4V
C106	1-126-607-11	ELECT CHIP	47uF	20%	4V
C107	1-126-607-11	ELECT CHIP	47uF	20%	4V
C108	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C109	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C110	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C111	1-164-346-11	CERAMIC CHIP	1uF		16V
C112	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C113	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C114	1-164-695-11	CERAMIC CHIP	0.0022uF	5%	50V
C115	1-164-695-11	CERAMIC CHIP	0.0022uF	5%	50V
C117	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C118	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C119	1-164-695-11	CERAMIC CHIP	0.0022uF	5%	50V
C120	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C151	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C152	1-164-346-11	CERAMIC CHIP	1uF		16V
C153	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C154	1-164-695-11	CERAMIC CHIP	0.0022uF	5%	50V
C155	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V
C171	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C172	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C173	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C174	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C201	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C202	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V
C203	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C204	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C205	1-164-346-11	CERAMIC CHIP	1uF		16V
C206	1-163-093-00	CERAMIC CHIP	10PF	5%	50V
C207	1-163-093-00	CERAMIC CHIP	10PF	5%	50V
C208	1-164-346-11	CERAMIC CHIP	1uF		16V
C209	1-164-346-11	CERAMIC CHIP	1uF		16V
C210	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C299	1-164-346-11	CERAMIC CHIP	1uF		16V
C301	1-164-346-11	CERAMIC CHIP	1uF		16V
C302	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C303	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C304	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C305	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C306	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V
C307	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V
C308	1-164-346-11	CERAMIC CHIP	1uF		16V
C309	1-164-346-11	CERAMIC CHIP	1uF		16V
C310	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C311	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C312	1-164-346-11	CERAMIC CHIP	1uF		16V
C401	1-164-232-11	CERAMIC CHIP	0.01uF		50V
		< CONNECTOR >			
CN101	1-580-858-11	SOCKET, CONNECTOR (SMT) 5P			
CN102	1-580-866-11	SOCKET, CONNECTOR (SMT) 12P			
CN103	1-580-872-41	SOCKET, CONNECTOR (SMT) 19P			
		< DIODE >			
D101	8-719-421-82	DIODE MA8043-M			
D201	8-719-016-74	DIODE 1SS352			

< IC >

Ref. No.	Part No.	Description		Remark
IC101	8-752-053-73	IC	CXA1372AQ	
IC101	8-752-058-77	IC	CXA1372AQ	
IC102	8-759-823-48	IC	LA6525M	
IC103	8-759-636-20	IC	M54641FP-TP	
IC201	8-752-352-93	IC	CXD2500BQ	
IC201	8-752-351-78	IC	CXD2500BQ	
IC202	8-759-248-71	IC	uPD75116GF-J06-3BE	
IC203	8-759-098-27	IC	MSM6538-01GS-VKR1	
IC301	8-759-155-52	IC	PCM-67U-B	
IC302	8-759-100-96	IC	UPC4558G2	
IC302	8-759-996-43	IC	RC4558PS	

< JACK >

Ref. No.	Part No.	Description			Remark
J201	1-216-296-91	METAL GLAZE	0	5%	1/8W
J203	1-216-296-91	METAL GLAZE	0	5%	1/8W
J205	1-216-295-00	METAL CHIP	0	5%	1/10W
J206	1-216-296-91	METAL GLAZE	0	5%	1/8W
J207	1-216-296-91	METAL GLAZE	0	5%	1/8W
J208	1-216-295-00	METAL CHIP	0	5%	1/10W
J209	1-216-296-91	METAL GLAZE	0	5%	1/8W
J210	1-216-296-91	METAL GLAZE	0	5%	1/8W
J211	1-216-296-91	METAL GLAZE	0	5%	1/8W
J212	1-216-296-91	METAL GLAZE	0	5%	1/8W
J215	1-216-295-00	METAL CHIP	0	5%	1/10W

< TRANSISTOR >

Ref. No.	Part No.	Description		Remark
Q101	8-729-805-45	TRANSISTOR	2SC3395	
Q201	8-729-602-21	TRANSISTOR	2SC4154	

< RESISTOR >

Ref. No.	Part No.	Description			Remark
R101	1-216-097-00	METAL CHIP	100K	5%	1/10W
R102	1-216-097-00	METAL CHIP	100K	5%	1/10W
R103	1-216-091-00	METAL CHIP	56K	5%	1/10W
R104	1-216-099-00	METAL CHIP	120K	5%	1/10W
R105	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R106	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R107	1-216-114-00	METAL GLAZE	510K	5%	1/10W
R108	1-216-105-00	METAL CHIP	220K	5%	1/10W
R109	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R110	1-216-049-00	METAL CHIP	1K	5%	1/10W
R111	1-216-049-00	METAL CHIP	1K	5%	1/10W
R112	1-216-083-00	METAL CHIP	27K	5%	1/10W
R113	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R114	1-216-105-00	METAL CHIP	220K	5%	1/10W
R152	1-216-073-00	METAL CHIP	10K	5%	1/10W
R153	1-216-085-00	METAL CHIP	33K	5%	1/10W
R154	1-216-085-00	METAL CHIP	33K	5%	1/10W
R155	1-216-093-00	METAL CHIP	68K	5%	1/10W
R156	1-216-081-00	METAL CHIP	22K	5%	1/10W
R157	1-236-427-11	NETWORK, RES	18K		
R159	1-216-079-00	METAL CHIP	18K	5%	1/10W
R160	1-216-049-00	METAL CHIP	1K	5%	1/10W
R171	1-216-001-00	METAL CHIP	10	5%	1/10W
R172	1-216-001-00	METAL CHIP	10	5%	1/10W
R173	1-216-001-00	METAL CHIP	10	5%	1/10W
R174	1-216-001-00	METAL CHIP	10	5%	1/10W
R201	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R202	1-216-073-00	METAL CHIP	10K	5%	1/10W
R203	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R204	1-216-073-00	METAL CHIP	10K	5%	1/10W
R205	1-216-097-00	METAL CHIP	100K	5%	1/10W
R209	1-216-081-00	METAL CHIP	22K	5%	1/10W
R212	1-239-039-11	RESISTOR, NETWORK (1608)			
R214	1-239-039-11	RESISTOR, NETWORK (1608)			
R218	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R219	1-216-073-00	METAL CHIP	10K	5%	1/10W
R220	1-216-001-00	METAL CHIP	10	5%	1/10W
R222	1-236-427-11	NETWORK, RES	18K		
R223	1-216-081-00	METAL CHIP	22K	5%	1/10W
R224	1-216-081-00	METAL CHIP	22K	5%	1/10W
R225	1-216-081-00	METAL CHIP	22K	5%	1/10W
R226	1-216-081-00	METAL CHIP	22K	5%	1/10W
R230	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R231	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R232	1-216-041-00	METAL CHIP	470	5%	1/10W
R233	1-216-041-00	METAL CHIP	470	5%	1/10W
R234	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R235	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R236	1-236-413-11	NETWORK, RES	1.2K		
R301	1-236-413-11	NETWORK, RES	1.2K		
R303	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R304	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R305	1-216-097-00	METAL CHIP	100K	5%	1/10W
R306	1-216-097-00	METAL CHIP	100K	5%	1/10W

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description	Remark
RV101	1-241-395-11	RES, ADJ, METAL GLAZE 10K(TRACKING GAIN)	
RV102	1-241-395-11	RES, ADJ, METAL GLAZE 10K(GAIN FOCUS)	

< SWITCH >

Ref. No.	Part No.	Description	Remark
SW101	1-572-085-11	SWITCH, LEAF(LIMIT)	

< CRYSTAL >

Ref. No.	Part No.	Description	Remark
X201	1-567-908-11	VIBRATOR, CRYSTAL(16MHz)	

BD(A) DISPLAY

Ref. No.	Part No.	Description	Remark
X202	1-579-216-11	VIBRATOR, CERAMIC(4MHz)	

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Ref. No.	Part No.	Description	Remark
*	A-4369-006-A	DISPLAY BOARD, COMPLETE(AEP) ***********************	
*	A-4365-998-A	DISPLAY BOARD, COMPLETE(Canadian) ***********************	
*	A-4369-014-A	DISPLAY BOARD, COMPLETE(G) ***********************	
*	A-4369-026-A	DISPLAY BOARD, COMPLETE(UK) ***********************	
*	A-4369-050-A	DISPLAY BOARD, COMPLETE *********************** (E, AUS, EA, MX, MY, SP)	
*	A-4369-052-A	DISPLAY BOARD, COMPLETE(IT) ***********************	
*	A-4369-057-A	DISPLAY BOARD, COMPLETE(EE) ***********************	
*	4-932-810-11	CUSHION (FL)	
	4-963-277-11	HOLDER (FL)	

< CAPACITOR >

Ref. No.	Part No.	Description				Remark
C201	1-126-177-11	ELECT	100uF	20%	10V	
C202	1-164-159-11	CERAMIC	0.1uF		50V	
C203	1-124-229-00	ELECT	33uF	20%	10V	
C205	1-126-301-11	ELECT	1uF	20%	50V	
C206	1-164-159-11	CERAMIC	0.1uF		50V	
C207	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C208	1-126-157-11	ELECT	10uF	20%	16V	
C209	1-162-205-31	CERAMIC	18PF	5%	50V	
C210	1-162-205-31	CERAMIC	18PF	5%	50V	
C211	1-126-177-11	ELECT	100uF	20%	10V	
C212	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C213	1-126-948-11	ELECT	100uF	20%	35V	
C214	1-164-159-11	CERAMIC	0.1uF		50V	
C215	1-164-159-11	CERAMIC	0.1uF		50V	
C216	1-164-159-11	CERAMIC	0.1uF		50V	
C217	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C218	1-124-584-00	ELECT	100uF	20%	10V	
C219	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C220	1-126-177-11	ELECT	100uF	20%	10V	
C221	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C222	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C223	1-164-159-11	CERAMIC	0.1uF		50V	
C230	1-162-286-31	CERAMIC	220PF	10%	50V	
C231	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C2000	1-126-177-11	ELECT	100uF	20%	10V	
C2001	1-162-286-31	CERAMIC	220PF	10%	50V	(E, AUS, EA, MX, MY, SP)
C2002	1-162-286-31	CERAMIC	220PF	10%	50V	(E, AUS, EA, MX, MY, SP)
C2003	1-162-286-31	CERAMIC	220PF	10%	50V	(E, AUS, EA, MX, MY, SP)
C2004	1-162-286-31	CERAMIC	220PF	10%	50V	(E, AUS, EA, MX, MY, SP)
C2005	1-162-286-31	CERAMIC	220PF	10%	50V	(E, AUS, EA, MX, MY, SP)
C2006	1-162-286-31	CERAMIC	220PF	10%	50V	(E, AUS, EA, MX, MY, SP)
C2007	1-162-286-31	CERAMIC	220PF	10%	50V	(E, AUS, EA, MX, MY, SP)
C2008	1-162-286-31	CERAMIC	220PF	10%	50V	(E, AUS, EA, MX, MY, SP)
C2009	1-162-286-31	CERAMIC	220PF	10%	50V	(E, AUS, EA, MX, MY, SP)
C2010	1-162-286-31	CERAMIC	220PF	10%	50V	(E, AUS, EA, MX, MY, SP)
C2011	1-162-286-31	CERAMIC	220PF	10%	50V	(E, AUS, EA, MX, MY, SP)

< CRYSTAL >

Ref. No.	Part No.	Description	Remark
CF201	1-567-775-11	VIBRATOR, CERAMIC	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN201	1-764-298-11	HOUSING, CONNECTOR(PC BOARD)16P	
CN202	1-691-644-11	SOCKET, CONNECTOR 7P	
CN203	1-691-649-11	SOCKET, CONNECTOR 17P	
* CN2001	1-565-042-11	HOUSING, CONNECTOR(PC BOARD)5P	(E, AUS, EA, MX, MY, SP)

< DIODE >

Ref. No.	Part No.	Description	Remark
D201	8-719-987-63	DIODE 1N4148M	
D202	8-719-987-63	DIODE 1N4148M	
D203	8-719-987-63	DIODE 1N4148M	
D204	8-719-987-63	DIODE 1N4148M	
D205	8-719-987-63	DIODE 1N4148M	
D206	8-719-010-40	DIODE UZ-5.6BS-TP	
D207	8-719-010-40	DIODE UZ-5.6BS-TP	
D208	8-719-014-90	DIODE UZP-7.5B(EXCEPT G)	
D208	8-719-014-98	DIODE UZP-8.2B(G)	
D213	8-719-026-64	LED SML1260S(PRESET)	
D214	8-719-026-64	LED SML1260S(MAIN)	(E, AUS, EA, MX, MY, SP)
D215	8-719-026-64	LED SML1260S(SUB)	(E, AUS, EA, MX, MY, SP)
D216	8-719-026-64	LED SML1260S(PON/SURR)	
D217	8-719-026-64	LED SML1260S(DBS. HIGHT)	
D219	8-719-026-64	LED SML1260S(DBS. LOW)	
D2000	8-719-987-63	DIODE 1N4148M	
D2001	8-719-987-63	DIODE 1N4148M	
D2002	8-719-987-63	DIODE 1N4148M	

< FILTER >

Ref. No.	Part No.	Description	Remark
FL201	1-517-247-11	INDICATOR TUBE, FLUORESCENT	

DISPLAY

< IC >

Ref. No.	Part No.	Description	Remark
IC201	8-759-248-73	IC uPD78043GF-060-3B9	
IC202	8-759-188-67	IC X24C01P-S	
IC203	8-759-165-82	IC PST600E-T	
IC204	8-749-923-80	IC GP1U90XB	
IC205	8-759-000-48	IC MC14052BCP	
IC206	8-759-248-70	IC XR1093	
IC2000	8-759-184-40	IC LB1638	

< COIL >

Ref. No.	Part No.	Description	Remark
L201	1-410-521-11	INDUCTOR 100uH	
L202	1-410-521-11	INDUCTOR 100uH	
L203	1-410-521-11	INDUCTOR 100uH	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q201	8-729-119-78	TRANSISTOR 2SC403SP-51(EXCEPT IT)	
Q201	8-729-620-05	TRANSISTOR 2SC2603-EF(IT)	
Q202	8-729-900-61	TRANSISTOR DTA114ES	
Q203	8-729-900-80	TRANSISTOR DTC114ES	
Q204	8-729-119-78	TRANSISTOR 2SC403SP-51(EXCEPT IT)	
Q204	8-729-620-05	TRANSISTOR 2SC2603-EF(IT)	
Q205	8-729-900-80	TRANSISTOR DTC114ES	
Q206	8-729-900-80	TRANSISTOR DTC114ES	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R201	1-249-419-11	CARBON 1.5K 5% 1/4W	
R202	1-249-409-11	CARBON 220 5% 1/4W	
R204	1-249-406-11	CARBON 120 5% 1/4W	
R205	1-247-811-31	CARBON 150 5% 1/4W	
R206	1-249-408-11	CARBON 180 5% 1/4W	
R207	1-249-409-11	CARBON 220 5% 1/4W	
R208	1-249-410-11	CARBON 270 5% 1/4W	
R209	1-249-411-11	CARBON 330 5% 1/4W	
R211	1-249-419-11	CARBON 1.5K 5% 1/4W	
R212	1-247-807-31	CARBON 100 5% 1/4W	
R213	1-249-406-11	CARBON 120 5% 1/4W	
R214	1-249-406-11	CARBON 120 5% 1/4W	
R215	1-247-811-31	CARBON 150 5% 1/4W	
R216	1-249-408-11	CARBON 180 5% 1/4W	
R217	1-249-409-11	CARBON 220 5% 1/4W	
R218	1-249-410-11	CARBON 270 5% 1/4W	
R219	1-249-416-11	CARBON 820 5% 1/4W	
R222	1-249-411-11	CARBON 330 5% 1/4W	
R223	1-249-411-11	CARBON 330 5% 1/4W	(E, AUS, EA, MX, MY, SP)
R224	1-249-411-11	CARBON 330 5% 1/4W	(E, AUS, EA, MX, MY, SP)
R225	1-249-411-11	CARBON 330 5% 1/4W	
R226	1-249-411-11	CARBON 330 5% 1/4W	
R227	1-249-417-11	CARBON 1K 5% 1/4W	
R228	1-249-417-11	CARBON 1K 5% 1/4W	
R229	1-249-417-11	CARBON 1K 5% 1/4W	
R230	1-249-417-11	CARBON 1K 5% 1/4W	
R231	1-249-417-11	CARBON 1K 5% 1/4W	
R232	1-249-417-11	CARBON 1K 5% 1/4W	
R233	1-249-417-11	CARBON 1K 5% 1/4W	
R234	1-249-417-11	CARBON 1K 5% 1/4W	
R235	1-249-429-11	CARBON 10K 5% 1/4W	
R236	1-249-429-11	CARBON 10K 5% 1/4W	
R238	1-249-419-11	CARBON 1.5K 5% 1/4W	
R240	1-249-417-11	CARBON 1K 5% 1/4W	
R241	1-249-417-11	CARBON 1K 5% 1/4W	
R242	1-249-417-11	CARBON 1K 5% 1/4W	
R243	1-249-417-11	CARBON 1K 5% 1/4W	
R244	1-249-417-11	CARBON 1K 5% 1/4W	
R245	1-249-417-11	CARBON 1K 5% 1/4W	
R246	1-249-417-11	CARBON 1K 5% 1/4W	
R247	1-249-417-11	CARBON 1K 5% 1/4W	
R248	1-249-417-11	CARBON 1K 5% 1/4W	
R249	1-249-417-11	CARBON 1K 5% 1/4W	
R250	1-249-429-11	CARBON 10K 5% 1/4W	
R251	1-249-417-11	CARBON 1K 5% 1/4W	
R252	1-249-429-11	CARBON 10K 5% 1/4W	
R253	1-249-437-11	CARBON 47K 5% 1/4W	
R254	1-249-437-11	CARBON 47K 5% 1/4W	
R255	1-249-437-11	CARBON 47K 5% 1/4W	
R256	1-249-437-11	CARBON 47K 5% 1/4W	
R257	1-249-437-11	CARBON 47K 5% 1/4W	
R258	1-249-437-11	CARBON 47K 5% 1/4W	
R259	1-249-437-11	CARBON 47K 5% 1/4W	
R260	1-249-437-11	CARBON 47K 5% 1/4W	
R261	1-249-437-11	CARBON 47K 5% 1/4W	
R262	1-249-437-11	CARBON 47K 5% 1/4W	
R263	1-249-437-11	CARBON 47K 5% 1/4W	
R264	1-249-437-11	CARBON 47K 5% 1/4W	
R265	1-249-437-11	CARBON 47K 5% 1/4W	
R266	1-249-437-11	CARBON 47K 5% 1/4W	
R267	1-249-437-11	CARBON 47K 5% 1/4W	
R268	1-249-437-11	CARBON 47K 5% 1/4W	
R269	1-249-437-11	CARBON 47K 5% 1/4W	
R270	1-249-437-11	CARBON 47K 5% 1/4W	
R271	1-249-437-11	CARBON 47K 5% 1/4W	
R272	1-249-437-11	CARBON 47K 5% 1/4W	
R273	1-249-425-11	CARBON 4.7K 5% 1/4W	
R274	1-249-429-11	CARBON 10K 5% 1/4W	
R275	1-249-429-11	CARBON 10K 5% 1/4W	
R276	1-249-429-11	CARBON 10K 5% 1/4W	
R277	1-249-417-11	CARBON 1K 5% 1/4W	
R278	1-249-429-11	CARBON 10K 5% 1/4W	

DISPLAY

ECHO

Ref. No.	Part No.	Description	Remark
R279	1-249-422-11	CARBON 2.7K 5% 1/4W	
R280	1-249-422-11	CARBON 2.7K 5% 1/4W	
R281	1-249-423-11	CARBON 3.3K 5% 1/4W	
R282	1-249-419-11	CARBON 1.5K 5% 1/4W	
R283	1-249-441-11	CARBON 100K 5% 1/4W	
R284	1-249-429-11	CARBON 10K 5% 1/4W	
R285	1-249-425-11	CARBON 4.7K 5% 1/4W	
R286	1-249-429-11	CARBON 10K 5% 1/4W	
R287	1-247-807-31	CARBON 100 5% 1/4W	
R288	1-247-807-31	CARBON 100 5% 1/4W	
R289	1-249-429-11	CARBON 10K 5% 1/4W	
R298	1-249-411-11	CARBON 330 5% 1/4W	
R2051	1-249-421-11	CARBON 2.2K 5% 1/4W	(E, AUS, EA, MX, MY, SP)
R2051	1-249-413-11	CARBON 470 5% 1/4W(G)	
R2051	1-247-844-11	CARBON 3.6K 5% 1/4W(Canadian)	
R2051	1-247-832-11	CARBON 1.1K 5% 1/4W(IT)	
R2051	1-249-426-11	CARBON 5.6K 5% 1/4W(EE)	
R2052	1-249-429-11	CARBON 10K 5% 1/4W(G)	
		< VARIABLE RESISTOR >	
RV2001	1-241-876-11	RES, VAR, CARBON 50K(MIC VOLUME)	(E, AUS, EA, MX, MY, SP)
RV2002	1-241-876-11	RES, VAR, CARBON 50K(ECHO VOLUME)	(E, AUS, EA, MX, MY, SP)
		< SWITCH >	
S201	1-572-184-11	SWITCH, KEY BOARD(SYSTEM POWER)	
S203	1-572-184-11	SWITCH, KEY BOARD(TIMER SET)	
S204	1-572-184-11	SWITCH, KEY BOARD(DAILY)	
S205	1-572-184-11	SWITCH, KEY BOARD(REC TIMER)	
S206	1-572-184-11	SWITCH, KEY BOARD(CLOCK SET)	
S207	1-572-184-11	SWITCH, KEY BOARD(MPX)	(E, AUS, EA, MX, MY, SP)
S208	1-572-184-11	SWITCH, KEY BOARD(DBFB)	
S209	1-572-184-11	SWITCH, KEY BOARD(S.SVR)	
S211	1-572-184-11	SWITCH, KEY BOARD(EFEFCT)	
S212	1-572-184-11	SWITCH, KEY BOARD(EQ PRESET)	
S213	1-572-184-11	SWITCH, KEY BOARD(MEMORY/NEXT)	
S214	1-572-184-11	SWITCH, KEY BOARD(FUNCTION)	
S215	1-572-184-11	SWITCH, KEY BOARD(TUNER/BAND)	
S216	1-572-184-11	SWITCH, KEY BOARD(PRESET/TUNING)	
S217	1-572-184-11	SWITCH, KEY BOARD(PRESET)	
S218	1-572-184-11	SWITCH, KEY BOARD(TUNER/TIMER)	
		< CRYSTAL >	
X201	1-567-098-41	VIBRATOR, CRYSTAL(32.768MHz)	

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Ref. No.	Part No.	Description	Remark
*	A-4369-051-A	ECHO BOARD, COMPLETE(E, AUS, EA, MX, MY, SP) ********************	
		< CAPACITOR >	
C100	1-162-282-31	CERAMIC 100PF 10% 50V	(E, AUS, EA, MX, MY, SP)
C110	1-124-907-11	ELECT 10uF 20% 50V	(E, AUS, EA, MX, MY, SP)
C113	1-162-282-31	CERAMIC 100PF 10% 50V	(E, AUS, EA, MX, MY, SP)
C114	1-124-907-11	ELECT 10uF 20% 50V	(E, AUS, EA, MX, MY, SP)
C116	1-124-903-11	ELECT 1uF 20% 50V	(E, AUS, EA, MX, MY, SP)
C117	1-130-484-00	MYLAR 0.012uF 5% 50V	(E, AUS, EA, MX, MY, SP)
C118	1-124-903-11	ELECT 1uF 20% 50V	(E, AUS, EA, MX, MY, SP)
C119	1-161-494-00	CERAMIC 0.022uF 25V	(E, AUS, EA, MX, MY, SP)
C120	1-102-118-00	CERAMIC 0.0012uF 10% 50V	(E, AUS, EA, MX, MY, SP)
C121	1-136-163-00	FILM 0.068uF 5% 50V	(E, AUS, EA, MX, MY, SP)
C122	1-124-910-11	ELECT 47uF 20% 50V	(E, AUS, EA, MX, MY, SP)
C123	1-164-159-11	CERAMIC 0.1uF 50V	(E, AUS, EA, MX, MY, SP)
C124	1-164-159-11	CERAMIC 0.1uF 50V	(E, AUS, EA, MX, MY, SP)
C125	1-136-163-00	FILM 0.068uF 5% 50V	(E, AUS, EA, MX, MY, SP)
C126	1-102-118-00	CERAMIC 0.0012uF 10% 50V	(E, AUS, EA, MX, MY, SP)
C127	1-124-903-11	ELECT 1uF 20% 50V	(E, AUS, EA, MX, MY, SP)
C128	1-130-484-00	MYLAR 0.012uF 5% 50V	(E, AUS, EA, MX, MY, SP)
C129	1-161-494-00	CERAMIC 0.022uF 25V	(E, AUS, EA, MX, MY, SP)
C130	1-126-101-11	ELECT 100uF 20% 16V	(E, AUS, EA, MX, MY, SP)
C131	1-164-159-11	CERAMIC 0.1uF 50V	(E, AUS, EA, MX, MY, SP)
C132	1-124-907-11	ELECT 10uF 20% 50V	(E, AUS, EA, MX, MY, SP)
C134	1-162-288-31	CERAMIC 330PF 10% 50V	(E, AUS, EA, MX, MY, SP)
C135	1-162-288-31	CERAMIC 330PF 10% 50V	(E, AUS, EA, MX, MY, SP)

Ref. No.	Part No.	Description	Remark
		< CONNECTOR >	
* CN101	1-565-041-11	PIN, CONNECTOR (PC BOARD) 5P	(E, AUS, EA, MX, MY, SP)
CN102	1-695-368-31	PIN, CONNECTOR (PC BOARD) 7P	(E, AUS, EA, MX, MY, SP)
		< DIODE >	
D101	8-719-028-15	DIODE LED-SX-TP	(E, AUS, EA, MX, MY, SP)
		< IC >	
IC101	8-759-634-51	IC M5218AP	(E, AUS, EA, MX, MY, SP)
IC103	8-759-248-69	IC M65830AP	(E, AUS, EA, MX, MY, SP)
		< COIL >	
L101	1-408-104-00	INDUCTOR 1mH	(E, AUS, EA, MX, MY, SP)
		< RESISTOR >	
R106	1-247-887-00	CARBON	220K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R107	1-247-887-00	CARBON	220K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R108	1-249-432-11	CARBON	18K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R109	1-249-429-11	CARBON	10K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R110	1-249-429-11	CARBON	10K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R111	1-249-429-11	CARBON	10K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R114	1-249-417-11	CARBON	1K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R115	1-249-431-11	CARBON	15K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R116	1-249-431-11	CARBON	15K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R117	1-249-429-11	CARBON	10K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R118	1-247-866-11	CARBON	30K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R119	1-247-842-11	CARBON	3K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R120	1-249-431-11	CARBON	15K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R121	1-249-429-11	CARBON	10K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R122	1-249-431-11	CARBON	15K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R123	1-249-422-11	CARBON	2.7K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R124	1-247-903-00	CARBON	1M 5% 1/4W (E, AUS, EA, MX, MY, SP)
R125	1-247-883-00	CARBON	150K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R126	1-247-794-11	CARBON	30 5% 1/4W (E, AUS, EA, MX, MY, SP)
R149	1-249-423-11	CARBON	3.3K 5% 1/4W (E, AUS, EA, MX, MY, SP)
R150	1-249-429-11	CARBON	10K 5% 1/4W (E, AUS, EA, MX, MY, SP)
		< CRYSTAL >	
X101	1-577-637-11	VIBRATOR, CERAMIC(500kHz)	(E, AUS, EA, MX, MY, SP)

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Ref. No.	Part No.	Description	Remark
*	1-651-085-11	JACK BOARD **********	
		< CAPACITOR >	
C102	1-162-294-31	CERAMIC	0.001uF 10% 50V (E, AUS, EA, MX, MY, SP, CA)
C103	1-162-294-31	CERAMIC	0.001uF 10% 50V (E, AUS, EA, MX, MY, SP, CA)
C104	1-162-282-31	CERAMIC	100PF 10% 50V (E, AUS, EA, MX, MY, SP, CA)
C106	1-162-215-31	CERAMIC	47PF 5% 50V (E, AUS, EA, MX, MY, SP, CA)
C107	1-126-157-11	ELECT	10uF 20% 16V (E, AUS, EA, MX, MY, SP, CA)
C108	1-126-157-11	ELECT	10uF 20% 16V (E, AUS, EA, MX, MY, SP, CA)
C109	1-124-463-00	ELECT	0.1uF 20% 50V (E, AUS, EA, MX, MY, SP, CA)
C111	1-162-294-31	CERAMIC	0.001uF 10% 50V (E, AUS, EA, MX, MY, SP, CA)
C112	1-164-159-11	CERAMIC	0.1uF 50V (E, AUS, EA, MX, MY, SP, CA)
C151	1-162-282-31	CERAMIC	100PF 10% 50V
C152	1-162-282-31	CERAMIC	100PF 10% 50V
C153	1-161-379-00	CERAMIC	0.01uF 20% 25V (G, IT)
		< CONNECTOR >	
CN151	1-568-852-11	PIN, CONNECTOR (PC BOARD) 9P	
		< IC >	
IC151	8-759-634-51	IC M5218AP	(E, AUS, EA, MX, MY, SP, CA)
		< JACK >	
J101	1-750-032-11	JACK (DIA. 3.5)(MIC JACK)	(E, AUS, EA, MX, MY, SP, CA)

JACK LOADING MAIN

Ref. No.	Part No.	Description	Remark
J151	1-750-032-11	JACK (DIA. 3.5)(HEADPHONE)	
		< RESISTOR >	
R101	1-249-429-11	CARBON 10K 5% 1/4W	(E, AUS, EA, MX, MY, SP, CA)
R102	1-249-417-11	CARBON 1K 5% 1/4W	(E, AUS, EA, MX, MY, SP)
R102	1-249-414-11	CARBON 560 5% 1/4W(Canadian)	
R103	1-249-417-11	CARBON 1K 5% 1/4W	(E, AUS, EA, MX, MY, SP, CA)
R104	1-247-889-00	CARBON 270K 5% 1/4W	(E, AUS, EA, MX, MY, SP, CA)
R105	1-249-441-11	CARBON 100K 5% 1/4W	(E, AUS, EA, MX, MY, SP, CA)
R151	1-249-414-11	CARBON 560 5% 1/4W	
R152	1-249-414-11	CARBON 560 5% 1/4W	
**			
*	1-650-836-11	LOADING BOARD *************	
		< CONNECTOR >	
CN291	1-580-918-11	HOUSING, CONNECTOR 5P	
		< SWITCH >	
S291	1-572-086-11	SWITCH, LEAF(LOAD OUT)	
S292	1-572-086-11	SWITCH, LEAF(LOAD IN)	
**			
*	A-4365-991-A	MAIN BOARD, COMPLETE(Canadian) ********************	
*	A-4365-999-A	MAIN BOARD, COMPLETE(AEP) ********************	
*	A-4369-007-A	MAIN BOARD, COMPLETE(G, IT) ********************	
*	A-4369-019-A	MAIN BOARD, COMPLETE(UK) ********************	
*	A-4369-043-A	MAIN BOARD, COMPLETE(E, AUS, EA, MX, MY, SP) ********************	
*	A-4369-056-A	MAIN BOARD, COMPLETE(EE) ********************	
	4-925-530-01	PLATE, GROUND(TB2)(H650/H650M:AEP, IT)	
	7-682-548-04	SCREW +BVTT 3X8 (S)	
		< CAPACITOR >	
C1	1-162-195-31	CERAMIC 4.7PF 10% 50V	(AEP, E, AUS, EA, MX, MY, SP)
C2	1-124-907-11	ELECT 10uF 20% 50V	
C3	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C4	1-162-294-31	CERAMIC 0.001uF 10% 50V	
C5	1-101-005-00	CERAMIC 22000PF 50V	(AEP, UK, EE)
C5	1-101-006-00	CERAMIC 0.047uF 50V	(E, AUS, EA, MX, MY, SP)
C6	1-162-280-31	CERAMIC 82PF 10% 50V	(AEP, UK, EE)
C6	1-162-195-31	CERAMIC 4.7PF 10% 50V	(E, AUS, EA, MX, MY, SP)
C7	1-136-162-00	FILM 0.056uF 5% 50V	(E, AUS, EA, MX, MY, SP)
C8	1-164-159-11	CERAMIC 0.1uF 50V	(E, AUS, EA, MX, MY, SP)
C9	1-102-120-00	CERAMIC 0.0018uF 10% 50V	(AEP, UK, EE)
C10	1-161-374-11	CERAMIC 0.0015uF 20% 50V	(AEP, UK, EE)
C11	1-164-097-11	CERAMIC 0.022uF 50V	(EXCEPT G, Canadian, IT)
C12	1-164-159-11	CERAMIC 0.1uF 50V	
C13	1-102-936-00	CERAMIC 3.0PF +-0.25PF 50V	(AEP, UK, EE)
C13	1-102-942-00	CERAMIC 5.0PF +-0.5PF 50V	(EXCEPT AEP, UK, EE)
C14	1-124-463-00	ELECT 0.1uF 20% 50V	
C15	1-164-095-11	CERAMIC 0.01uF 10% 16V	
C16	1-124-925-11	ELECT 2.2uF 20% 100V	
C17	1-164-097-11	CERAMIC 0.022uF 50V	(AEP, UK, EE)
C18	1-164-097-11	CERAMIC 0.022uF 50V	(AEP, UK, EE)
C19	1-124-902-00	ELECT 0.47uF 20% 50V	(AEP, UK, EE)
C20	1-124-477-11	ELECT 47uF 20% 25V	
C21	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C22	1-124-907-11	ELECT 10uF 20% 50V	
C23	1-164-095-11	CERAMIC 0.01uF 10% 16V	
C24	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C25	1-164-025-51	CERAMIC 18PF 5% 50V	
C26	1-164-025-51	CERAMIC 18PF 5% 50V	
C27	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C28	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C29	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C30	1-162-207-31	CERAMIC 22PF 5% 50V	
C31	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C32	1-124-907-11	ELECT 10uF 20% 50V	
C33	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C34	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C35	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C36	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C37	1-124-925-11	ELECT 2.2uF 20% 100V	
C38	1-124-903-11	ELECT 1uF 20% 50V	
C39	1-124-903-11	ELECT 1uF 20% 50V	
C40	1-161-379-00	CERAMIC 0.01uF 20% 25V	

Ref. No.	Part No.	Description			Remark
C41	1-126-962-11	ELECT	3.3uF	20%	50V
C42	1-124-907-11	ELECT	10uF	20%	50V
C43	1-161-379-00	CERAMIC	0.01uF	20%	25V
C44	1-161-377-00	CERAMIC	0.0047uF	30%	16V
C45	1-162-294-31	CERAMIC	0.001uF	10%	50V (EXCEPT G, TI)
C45	1-161-374-11	CERAMIC	0.0015uF	20%	50V (G, IT)
C46	1-162-282-31	CERAMIC	100PF	10%	50V (G, IT)
C47	1-124-903-11	ELECT	1uF	20%	50V
C48	1-130-485-00	MYLAR	0.015uF	5%	50V (EXCEPT Canadian)
C48	1-130-487-00	MYLAR	0.022uF	5%	50V (Canadian)
C49	1-130-485-00	MYLAR	0.015uF	5%	50V (EXCEPT Canadian)
C49	1-130-487-00	MYLAR	0.022uF	5%	50V (Canadian)
C50	1-124-903-11	ELECT	1uF	20%	50V
C51	1-124-903-11	ELECT	1uF	20%	50V
C52	1-124-903-11	ELECT	1uF	20%	50V
C53	1-124-903-11	ELECT	1uF	20%	50V
C54	1-161-375-00	CERAMIC	0.0022uF	20%	50V
C55	1-161-375-00	CERAMIC	0.0022uF	20%	50V
C56	1-124-477-11	ELECT	47uF	20%	25V
C57	1-126-176-11	ELECT	220uF	20%	10V
C58	1-161-494-00	CERAMIC	0.022uF		25V
C59	1-162-294-31	CERAMIC	0.001uF	10%	50V
C60	1-162-294-31	CERAMIC	0.001uF	10%	50V
C61	1-130-478-00	MYLAR	0.0039uF	5%	50V
C62	1-130-478-00	MYLAR	0.0039uF	5%	50V
C63	1-162-294-31	CERAMIC	0.001uF	10%	50V
C64	1-164-097-11	CERAMIC	0.022uF		50V
C65	1-101-884-00	CERAMIC	56PF	5%	50V
C66	1-162-294-31	CERAMIC	0.001uF	10%	50V
C68	1-161-379-00	CERAMIC	0.01uF	20%	25V (G, IT)
C100	1-162-294-31	CERAMIC	0.001uF	10%	50V (E, AUS, EA, MX, MY, SP)
C501	1-126-926-11	ELECT	1000uF	20%	10V
C502	1-124-907-11	ELECT	10uF	20%	50V
C503	1-124-903-11	ELECT	1uF	20%	50V
C504	1-124-443-00	ELECT	100uF	20%	10V
C505	1-124-903-11	ELECT	1uF	20%	50V
C506	1-124-907-11	ELECT	10uF	20%	50V
C507	1-161-379-00	CERAMIC	0.01uF	20%	25V
C601	1-162-286-31	CERAMIC	220PF	10%	50V
C604	1-162-282-31	CERAMIC	100PF	10%	50V (AEP, G, UK, IT, EE)
C605	1-124-927-11	ELECT	4.7uF	20%	100V (AEP, G, UK, IT, EE)

Ref. No.	Part No.	Description			Remark
C606	1-137-365-11	FILM	0.0015uF	5%	50V (AEP, G, UK, IT, EE)
C607	1-137-437-11	FILM	0.0056uF	5%	50V (AEP, G, UK, IT, EE)
C608	1-124-925-11	ELECT	2.2uF	20%	100V
C609	1-124-477-11	ELECT	47uF	20%	25V (AEP, G, UK, IT, EE)
C610	1-161-379-00	CERAMIC	0.01uF	20%	25V
C611	1-161-379-00	CERAMIC	0.01uF	20%	25V (E, AUS, EA, MX, MY, SP)
C612	1-162-294-31	CERAMIC	0.001uF	10%	50V (E, AUS, EA, MX, MY, SP)
C613	1-136-157-00	FILM	0.022uF	5%	50V (E, AUS, EA, MX, MY, SP)
C614	1-162-282-31	CERAMIC	100PF	10%	50V
C615	1-162-282-31	CERAMIC	100PF	10%	50V
C616	1-161-379-00	CERAMIC	0.01uF	20%	25V
C617	1-124-927-11	ELECT	4.7uF	20%	100V
C618	1-162-288-31	CERAMIC	330PF	10%	50V (G, Canadian, IT)
C619	1-161-379-00	CERAMIC	0.01uF	20%	25V (G, IT)
C620	1-162-282-31	CERAMI	100PF	10%	50V (G, IT)
C638	1-162-282-31	CERAMIC	100PF	10%	50V
C639	1-162-286-31	CERAMIC	220PF	10%	50V
C646	1-161-379-00	CERAMIC	0.01uF	20%	25V
C647	1-124-927-11	ELECT	4.7uF	20%	100V
C648	1-162-282-31	CERAMIC	100PF	10%	50V
C649	1-162-282-31	CERAMIC	100PF	10%	50V
C651	1-162-286-31	CERAMIC	220PF	10%	50V
C654	1-162-282-31	CERAMIC	100PF	10%	50V (AEP, G, UK, IT, EE)
C655	1-124-927-11	ELECT	4.7uF	20%	100V (AEP, G, UK, IT, EE)
C656	1-137-365-11	FILM	0.0015uF	5%	50V (AEP, G, UK, IT, EE)
C657	1-137-437-11	FILM	0.0056uF	5%	50V (AEP, G, UK, IT, EE)
C658	1-124-925-11	ELECT	2.2uF	20%	100V
C659	1-124-477-11	ELECT	47uF	20%	25V (AEP, G, UK, IT, EE)
C660	1-161-379-00	CERAMIC	0.01uF	20%	25V
C661	1-161-379-00	CERAMIC	0.01uF	20%	25V (E, AUS, EA, MX, MY, SP)
C662	1-162-294-31	CERAMIC	0.001uF	10%	50V (E, AUS, EA, MX, MY, SP)
C663	1-136-157-00	FILM	0.022uF	5%	50V (E, AUS, EA, MX, MY, SP)
C664	1-162-282-31	CERAMIC	100PF	10%	50V
C665	1-162-282-31	CERAMIC	100PF	10%	50V
C666	1-161-379-00	CERAMIC	0.01uF	20%	25V
C667	1-124-927-11	ELECT	4.7uF	20%	100V

MAIN

Ref. No.	Part No.	Description			Remark
C668	1-162-288-31	CERAMIC	330PF	10%	50V (G, Canadian, IT)
C669	1-161-379-00	CERAMIC	0.01uF	20%	25V (G, IT)
C670	1-162-282-31	CERAMIC	100PF	10%	50V (G, IT)
C688	1-162-282-31	CERAMIC	100PF	10%	50V
C689	1-162-286-31	CERAMIC	220PF	10%	50V
C696	1-161-379-00	CERAMIC	0.01uF	20%	25V
C697	1-124-927-11	ELECT	4.7uF	20%	100V
C698	1-162-282-31	CERAMIC	100PF	10%	50V
C699	1-162-282-31	CERAMIC	100PF	10%	50V
C701	1-161-379-00	CERAMIC	0.01uF	20%	25V
C702	1-161-379-00	CERAMIC	0.01uF	20%	25V
C704	1-124-252-00	ELECT	0.33uF	20%	50V
C705	1-124-902-00	ELECT	0.47uF	20%	50V
C706	1-136-166-00	FILM	0.12uF	5%	50V
C707	1-101-006-00	CERAMIC	0.047uF		50V
C709	1-124-902-00	ELECT	0.47uF	20%	50V
C710	1-124-464-11	ELECT	0.22uF	20%	50V
C711	1-136-162-00	FILM	0.056uF	5%	50V
C712	1-136-157-00	FILM	0.022uF	5%	50V
C713	1-162-286-31	CERAMIC	220PF	10%	50V
C714	1-162-286-31	CERAMIC	220PF	10%	50V
C715	1-137-368-11	FILM	0.0047uF	5%	50V
C716	1-137-366-11	FILM	0.0022uF	5%	50V
C717	1-137-437-11	FILM	0.0056uF	5%	50V
C718	1-137-439-91	FILM	0.012uF	5%	50V
C719	1-126-160-11	ELECT	1uF	20%	50V
C720	1-126-163-11	ELECT	4.7uF	20%	50V
C731	1-124-907-11	ELECT	10uF	20%	50V
C732	1-124-907-11	ELECT	10uF	20%	50V
C734	1-161-379-00	CERAMIC	0.01uF	20%	25V
C735	1-161-379-00	CERAMIC	0.01uF	20%	25V
C736	1-161-379-00	CERAMIC	0.01uF	20%	25V
C741	1-162-289-31	CERAMIC	390PF	10%	50V
C751	1-161-379-00	CERAMIC	0.01uF	20%	25V
C752	1-161-379-00	CERAMIC	0.01uF	20%	25V
C754	1-124-252-00	ELECT	0.33uF	20%	50V
C755	1-124-902-00	ELECT	0.47uF	20%	50V
C756	1-136-166-00	FILM	0.12uF	5%	50V
C757	1-101-006-00	CERAMIC	0.047uF		50V
C759	1-124-902-00	ELECT	0.47uF	20%	50V
C760	1-124-464-11	ELECT	0.22uF	20%	50V
C761	1-136-162-00	FILM	0.056uF	5%	50V
C762	1-136-157-00	FILM	0.022uF	5%	50V
C763	1-162-286-31	CERAMIC	220PF	10%	50V
C764	1-162-286-31	CERAMIC	220PF	10%	50V
C765	1-137-368-11	FILM	0.0047uF	5%	50V
C766	1-137-366-11	FILM	0.0022uF	5%	50V
C767	1-137-437-11	FILM	0.0056uF	5%	50V
C768	1-137-439-91	FILM	0.012uF	5%	50V
C769	1-124-903-11	ELECT	1uF	20%	50V
C770	1-126-163-11	ELECT	4.7uF	20%	50V
C777	1-164-159-11	CERAMIC	0.1uF		50V (EXCEPT Canadian)
C778	1-164-159-11	CERAMIC	0.1uF		50V
C849	1-164-159-11	CERAMIC	0.1uF		50V (G, IT)
C899	1-164-159-11	CERAMIC	0.1uF		50V (G, IT)
C1000	1-162-199-31	CERAMIC	10PF	5%	50V (G, IT)
		< FILTER >			
CF1	1-567-389-11	FILTER, CERAMIC			
CF2	1-567-389-11	FILTER, CERAMIC(G, IT)			
CF3	1-567-389-11	FILTER, CERAMIC			
		< CONNECTOR >			
* CN501	1-573-085-11	CONNECTOR, FPC (NON ZIF) 19P			
CN502	1-764-286-11	PIN, CONNECTOR (PC BOARD) 16P			
CN503	1-695-340-21	PIN, CONNECTOR (PC BOARD) 17P			
CN601	1-764-290-11	PIN, CONNECTOR (PC BOARD) 24P			
CN853	1-695-659-11	CONNECTOR, FFC/FPC 11P			
		< TRIMMER >			
CT1	1-141-227-00	CAP, TRIMMER	20PF(E, AUS, EA, MX, MY, SP)		
CT2	1-141-227-00	CAP, TRIMMER	20PF(E, AUS, EA, MX, MY, SP)		
		< DIODE >			
D1	8-719-976-30	DIODE	KV1560N(E, AUS, EA, MX, MY, SP)		
D2	8-719-987-63	DIODE	1N4148M		
D501	8-719-987-63	DIODE	1N4148M(E, AUS, EA, MX, MY, SP)		
D502	8-719-987-63	DIODE	1N4148M		
D503	8-719-987-63	DIODE	1N4148M(E, AUS, EA, MX, MY, SP)		
D504	8-719-987-63	DIODE	1N4148M(E, AUS, EA, MX, MY, SP)		
D551	8-719-987-63	DIODE	1N4148M(E, AUS, EA, MX, MY, SP)		
D552	8-719-987-63	DIODE	1N4148M(E, AUS, EA, MX, MY, SP)		
D702	8-719-987-63	DIODE	1N4148M		
D703	8-719-987-63	DIODE	1N4148M		
D704	8-719-987-63	DIODE	1N4148M		
D849	8-719-987-63	DIODE	1N4148M		
D899	8-719-987-63	DIODE	1N4148M		
		< FRONT END >			
FE1	1-465-673-11	FRONT END (2 BAND)			(H650:EXCEPT G/H650M:Canadian)
FE1	1-465-007-11	FRONT END (4 GANG)(G, IT)			
FE1	1-465-396-11	FRONT END (3 GANG)(EE)			
FE2	1-239-846-11	ENCAPSULATED COMPONENT(AEP, UK, EE)			
FE3	1-239-261-12	ENCAPSULATED COMPONENT(AEP, UK, EE)			

Ref. No.	Part No.	Description	Remark
FE3	1-239-262-11	ENCAPSULATED COMPONENT	(E, AUS, EA, MX, MY, SP)
FE3	1-239-260-11	ENCAPSULATED COMPONENT(G, IT)	
FE3	1-239-634-11	ENCAPSULATED COMPONENT, AM. R (Canadian)	
		< FILTER >	
FL1	1-236-465-11	ENCAPSULATED COMPONENT(G, IT)	
FL2	1-239-597-11	FILTER, LOW PASS	
FL3	1-239-597-11	FILTER, LOW PASS	
		< IC >	
IC1	8-759-175-87	IC LC7218-ST	
IC2	8-759-090-40	IC LA1831	
IC501	8-759-821-93	IC LA5601	
IC502	8-759-634-84	IC M50255P	
IC601	8-759-634-51	IC M5218AP	(AEP, G, UK, IT, EE)
IC602	8-759-000-48	IC MC14052BCP	
IC603	8-759-000-48	IC MC14052BCP	(H650:EXCEPT AEP, G)
IC605	8-759-145-58	IC UPC4558C	
IC606	8-759-145-58	IC UPC4558C	
IC701	8-759-603-14	IC M5229P	
IC731	8-759-081-01	IC NJU7305L	
IC751	8-759-603-14	IC M5229P	
		< IFT >	
IFT1	1-404-853-11	TRANSFORMER, IF(CERAMIC FILTER)	
		< JACK >	
J601	1-764-767-11	JACK, PIN 2P(MD/PHONO)(MD/AUX)	
J602	1-764-767-11	JACK, PIN 2P(LINE OUT)	
J801	1-764-767-11	JACK, PIN 2P(SURROUND SPEAKER)	(E, AUS, EA, MX, MY, SP)
		< COIL >	
L1	1-408-425-00	INDUCTOR 220uH (AEP, UK, EE)	
L3	1-410-496-11	INDUCTOR 1.5mH	
* L801	1-410-858-11	INDUCTOR 0uH (G, IT)	
* L851	1-410-858-11	INDUCTOR 0uH (G, IT)	
L1001	1-410-521-11	INDUCTOR 100uH (G, Canadian, IT)	
		< TRANSISTOR >	
Q1	8-729-230-XX	TRANSISTOR 2SC2669OY-TPE4	
Q2	8-729-230-XX	TRANSISTOR 2SC2669OY-TPE4	(G, IT)
Q3	8-729-900-61	TRANSISTOR DTA114ES	
Q4	8-729-119-76	TRANSISTOR 2SA1175-HFE	(EXCEPT G, Canadian, IT)
Q5	8-729-900-80	TRANSISTOR DTC114ES	(EXCEPT G, Canadian, IT)
Q6	8-729-900-80	TRANSISTOR DTC114ES	(EXCEPT G, Canadian, IT)

Ref. No.	Part No.	Description	Remark
Q7	8-729-900-80	TRANSISTOR DTC114ES	(EXCEPT G, Canadian, IT)
Q8	8-729-119-76	TRANSISTOR 2SA1175-HFE	(EXCEPT G, Canadian, IT)
Q9	8-729-900-80	TRANSISTOR DTC114ES	(EXCEPT G, Canadian, IT)
Q10	8-729-201-83	TRANSISTOR 2SC3112	
Q11	8-729-202-67	TRANSISTOR 2SK246-GR3	
Q12	8-729-201-83	TRANSISTOR 2SC3112	(AEP, UK, EE)
Q13	8-729-202-67	TRANSISTOR 2SK246-GR3	(AEP, UK, EE)
Q14	8-729-119-78	TRANSISTOR 2SC403SP-51	
Q15	8-729-119-78	TRANSISTOR 2SC403SP-51	
Q501	8-729-900-89	TRANSISTOR DTC144ES	
Q503	8-729-900-63	TRANSISTOR DTA124ES	
Q599	8-729-900-63	TRANSISTOR DTA124ES	
Q638	8-729-900-80	TRANSISTOR DTC114ES(E, AUS, EA, MX, MY, SP)	
Q639	8-729-141-26	TRANSISTOR 2SC3622A-LK	
Q688	8-729-900-80	TRANSISTOR DTC114ES(E, AUS, EA, MX, MY, SP)	
Q689	8-729-141-26	TRANSISTOR 2SC3622A-LK	
Q701	8-729-141-26	TRANSISTOR 2SC3622A-LK	
Q702	8-729-202-67	TRANSISTOR 2SK246-GR3	
Q731	8-729-900-63	TRANSISTOR DTA124ES	
Q751	8-729-141-26	TRANSISTOR 2SC3622A-LK	
		< RESISTOR >	
R1	1-249-411-11	CARBON 330 5% 1/4W	
R2	1-249-411-11	CARBON 330 5% 1/4W	
R3	1-247-891-00	CARBON 330K 5% 1/4W	
R4	1-249-411-11	CARBON 330 5% 1/4W	
R5	1-247-891-00	CARBON 330K 5% 1/4W	(G, IT)
R6	1-249-411-11	CARBON 330 5% 1/4W	(G, IT)
R7	1-247-807-31	CARBON 100 5% 1/4W	
R8	1-249-433-11	CARBON 22K 5% 1/4W	(EXCEPT G, Canadian, IT)
R9	1-249-437-11	CARBON 47K 5% 1/4W	(AEP, UK, EE)
R9	1-247-903-00	CARBON 1M 5% 1/4W	(E, AUS, EA, MX, MY, SP)
R10	1-247-903-00	CARBON 1M 5% 1/4W	(AEP, UK, EE)
R11	1-249-425-11	CARBON 4.7K 5% 1/4W	(EXCEPT G, Canadian, IT)
R12	1-249-437-11	CARBON 47K 5% 1/4W	
R13	1-249-437-11	CARBON 47K 5% 1/4W	
R16	1-249-425-11	CARBON 4.7K 5% 1/4W	(EXCEPT G, Canadian, IT)
R17	1-249-425-11	CARBON 4.7K 5% 1/4W	(EXCEPT G, Canadian, IT)
R18	1-249-429-11	CARBON 10K 5% 1/4W	(EXCEPT G, Canadian, IT)
R19	1-249-429-11	CARBON 10K 5% 1/4W	(EXCEPT G, Canadian, IT)

MAIN

Ref. No.	Part No.	Description	Remark
R20	1-249-429-11	CARBON 10K 5% 1/4W	(EXCEPT G, Canadian, IT)
R21	1-247-807-31	CARBON 100 5% 1/4W	
R22	1-249-425-11	CARBON 4.7K 5% 1/4W	
R23	1-249-425-11	CARBON 4.7K 5% 1/4W	
R24	1-249-421-11	CARBON 2.2K 5% 1/4W	
R25	1-249-425-11	CARBON 4.7K 5% 1/4W	
R26	1-249-414-11	CARBON 560 5% 1/4W	
R27	1-249-417-11	CARBON 1K 5% 1/4W	
R28	1-249-410-11	CARBON 270 5% 1/4W	
R29	1-249-423-11	CARBON 3.3K 5% 1/4W	
R30	1-249-425-11	CARBON 4.7K 5% 1/4W	(AEP, UK, EE)
R31	1-249-425-11	CARBON 4.7K 5% 1/4W	(AEP, UK, EE)
R32	1-249-421-11	CARBON 2.2K 5% 1/4W	(AEP, UK, EE)
R33	1-249-433-11	CARBON 22K 5% 1/4W	(AEP, UK, EE)
R34	1-249-414-11	CARBON 560 5% 1/4W	(AEP, UK, EE)
R35	1-249-417-11	CARBON 1K 5% 1/4W	(AEP, UK, EE)
R36	1-249-410-11	CARBON 270 5% 1/4W	(AEP, UK, EE)
R37	1-249-423-11	CARBON 3.3K 5% 1/4W	(AEP, UK, EE)
R38	1-249-401-11	CARBON 47 5% 1/4W	
R39	1-247-807-31	CARBON 100 5% 1/4W	
R40	1-249-429-11	CARBON 10K 5% 1/4W	
R41	1-249-417-11	CARBON 1K 5% 1/4W	
R42	1-249-417-11	CARBON 1K 5% 1/4W	
R43	1-249-417-11	CARBON 1K 5% 1/4W	
R44	1-249-417-11	CARBON 1K 5% 1/4W	
R45	1-249-417-11	CARBON 1K 5% 1/4W	
R46	1-249-425-11	CARBON 4.7K 5% 1/4W	
R47	1-249-417-11	CARBON 1K 5% 1/4W	
R48	1-249-399-11	CARBON 33 5% 1/4W	
R50	1-247-848-11	CARBON 5.1K 5% 1/4W	
R51	1-249-412-11	CARBON 390 5% 1/4W	
R52	1-249-429-11	CARBON 10K 5% 1/4W	
R53	1-247-842-11	CARBON 3K 5% 1/4W	
R54	1-249-429-11	CARBON 10K 5% 1/4W	
R55	1-249-429-11	CARBON 10K 5% 1/4W	
R56	1-249-441-11	CARBON 100K 5% 1/4W	
R57	1-249-430-11	CARBON 12K 5% 1/4W	(EXCEPT, G, IT)
R58	1-249-430-11	CARBON 12K 5% 1/4W	(G, IT)
R59	1-249-431-11	CARBON 15K 5% 1/4W	
R60	1-249-431-11	CARBON 15K 5% 1/4W	
R61	1-247-891-00	CARBON 330K 5% 1/4W	
R62	1-247-891-00	CARBON 330K 5% 1/4W	
R63	1-249-412-11	CARBON 390 5% 1/4W	
R64	1-249-412-11	CARBON 390 5% 1/4W	
R65	1-249-421-11	CARBON 2.2K 5% 1/4W	
R66	1-249-421-11	CARBON 2.2K 5% 1/4W	
R67	1-249-409-11	CARBON 220 5% 1/4W	

Ref. No.	Part No.	Description	Remark
R68	1-247-807-31	CARBON 100 5% 1/4W	(H650:AEP, G/H650M)
R68	1-249-402-11	CARBON 56 5% 1/4W	(E, AUS, EA, MX, MY, SP)
R69	1-249-425-11	CARBON 4.7K 5% 1/4W	
R70	1-249-425-11	CARBON 4.7K 5% 1/4W	
R74	1-249-429-11	CARBON 10K 5% 1/4W	
R80	1-249-429-11	CARBON 10K 5% 1/4W	(AEP, UK, EE)
R80	1-249-433-11	CARBON 22K 5% 1/4W	(E, AUS, EA, MX, MY, SP)
R81	1-249-429-11	CARBON 10K 5% 1/4W	(AEP, UK, EE)
R81	1-249-433-11	CARBON 22K 5% 1/4W	(E, AUS, EA, MX, MY, SP)
R99	1-249-420-11	CARBON 1.8K 5% 1/4W	(EXCEPT G, Canadian, IT)
R99	1-249-418-11	CARBON 1.2K 5% 1/4W	(G, Canadian, IT)
R501	1-249-393-11	CARBON 10 5% 1/4W	
⚠R502	1-217-637-00	FUSIBLE 1 5% 1/4W	
R503	1-249-433-11	CARBON 22K 5% 1/4W	
R505	1-249-429-11	CARBON 10K 5% 1/4W	
R506	1-249-429-11	CARBON 10K 5% 1/4W	
R507	1-249-433-11	CARBON 22K 5% 1/4W	
R508	1-249-429-11	CARBON 10K 5% 1/4W	
R511	1-249-417-11	CARBON 1K 5% 1/4W	
R512	1-249-417-11	CARBON 1K 5% 1/4W	
R601	1-249-417-11	CARBON 1K 5% 1/4W	
R603	1-249-434-11	CARBON 27K 5% 1/4W	(H650:AEP, G/H650M)
R603	1-249-430-11	CARBON 12K 5% 1/4W	(E, AUS, EA, MX, MY, SP)
R604	1-249-438-11	CARBON 56K 5% 1/4W	
R605	1-249-415-11	CARBON 680 5% 1/4W	(AEP, G, UK, IT, EE)
R606	1-249-437-11	CARBON 47K 5% 1/4W	(AEP, G, UK, IT, EE)
R607	1-247-897-11	CARBON 560K 5% 1/4W	(AEP, G, UK, IT, EE)
R608	1-247-895-00	CARBON 470K 5% 1/4W	
R610	1-247-807-31	CARBON 100 5% 1/4W	(AEP, G, UK, IT, EE)
R611	1-249-417-11	CARBON 1K 5% 1/4W	
R613	1-249-437-11	CARBON 47K 5% 1/4W	(E, AUS, EA, MX, MY, SP)
R614	1-249-437-11	CARBON 47K 5% 1/4W	
R615	1-249-437-11	CARBON 47K 5% 1/4W	(H650:EXCEPT AEP, G/H650M:Canadian)
R616	1-247-864-11	CARBON 24K 5% 1/4W	
R617	1-249-437-11	CARBON 47K 5% 1/4W	
R619	1-249-431-11	CARBON 15K 5% 1/4W	
R620	1-249-417-11	CARBON 1K 5% 1/4W	(G, IT)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
R631	1-249-429-11	CARBON 10K 5% 1/4W	
R632	1-249-429-11	CARBON 10K 5% 1/4W	
R633	1-249-429-11	CARBON 10K 5% 1/4W	(H650:EXCEPT AEP,G)
R634	1-249-429-11	CARBON 10K 5% 1/4W	(H650:EXCEPT AEP,G)
R635	1-249-429-11	CARBON 10K 5% 1/4W	(H650:EXCEPT AEP,G)
R638	1-249-425-11	CARBON 4.7K 5% 1/4W	
R639	1-249-425-11	CARBON 4.7K 5% 1/4W	
R645	1-247-887-00	CARBON 220K 5% 1/4W	
R647	1-249-425-11	CARBON 4.7K 5% 1/4W	
R648	1-249-429-11	CARBON 10K 5% 1/4W	
R649	1-249-429-11	CARBON 10K 5% 1/4W	
R651	1-249-417-11	CARBON 1K 5% 1/4W	
R653	1-249-434-11	CARBON 27K 5% 1/4W	(H650:AEP,G/H650M)
R653	1-249-430-11	CARBON 12K 5% 1/4W	(E,AUS,EA,MX,MY,SP)
R654	1-249-438-11	CARBON 56K 5% 1/4W	
R655	1-249-415-11	CARBON 680 5% 1/4W	(AEP,UK,IT,EE)
R656	1-249-437-11	CARBON 47K 5% 1/4W	(AEP,G,UK,IT,EE)
R657	1-247-897-11	CARBON 560K 5% 1/4W	(AEP,G,UK,IT,EE)
R658	1-247-895-00	CARBON 470K 5% 1/4W	
R660	1-247-807-31	CARBON 100 5% 1/4W	(AEP,G,UK,IT,EE)
R661	1-249-417-11	CARBON 1K 5% 1/4W	
R663	1-249-437-11	CARBON 47K 5% 1/4W	(E,AUS,EA,MX,MY,SP)
R664	1-249-437-11	CARBON 47K 5% 1/4W	
R665	1-249-437-11	CARBON 47K 5% 1/4W	(H650:EXCEPT AEP,G/H650M:Canadian)
R665	1-249-415-11	CARBON 680 5% 1/4W	(G,IT)
R666	1-247-864-11	CARBON 24K 5% 1/4W	
R667	1-249-437-11	CARBON 47K 5% 1/4W	
R669	1-249-431-11	CARBON 15K 5% 1/4W	
R670	1-249-417-11	CARBON 1K 5% 1/4W	(G,IT)
R688	1-249-425-11	CARBON 4.7K 5% 1/4W	
R689	1-249-425-11	CARBON 4.7K 5% 1/4W	
R695	1-247-887-00	CARBON 220K 5% 1/4W	
R696	1-247-887-00	CARBON 220K 5% 1/4W	(EE)
R697	1-249-425-11	CARBON 4.7K 5% 1/4W	
R698	1-249-429-11	CARBON 10K 5% 1/4W	
R699	1-249-429-11	CARBON 10K 5% 1/4W	
R701	1-249-427-11	CARBON 6.8K 5% 1/4W	
R702	1-247-854-11	CARBON 9.1K 5% 1/4W	
R704	1-247-903-00	CARBON 1M 5% 1/4W	
R705	1-247-903-00	CARBON 1M 5% 1/4W	

Ref. No.	Part No.	Description	Remark
R706	1-247-903-00	CARBON 1M 5% 1/4W	
R707	1-247-903-00	CARBON 1M 5% 1/4W	
R708	1-249-427-11	CARBON 6.8K 5% 1/4W	
R709	1-247-903-00	CARBON 1M 5% 1/4W	
R710	1-247-903-00	CARBON 1M 5% 1/4W	
R711	1-247-895-00	CARBON 470K 5% 1/4W	
R712	1-249-421-11	CARBON 2.2K 5% 1/4W	
R714	1-249-425-11	CARBON 4.7K 5% 1/4W	
R716	1-247-887-00	CARBON 220K 5% 1/4W	
R717	1-249-437-11	CARBON 47K 5% 1/4W	
R731	1-247-903-00	CARBON 1M 5% 1/4W	
R732	1-249-437-11	CARBON 47K 5% 1/4W	
R733	1-249-417-11	CARBON 1K 5% 1/4W	
R734	1-249-417-11	CARBON 1K 5% 1/4W	
R735	1-247-816-11	CARBON 240 5% 1/4W	
R736	1-249-442-11	CARBON 510 5% 1/4W	
R751	1-249-427-11	CARBON 6.8K 5% 1/4W	
R752	1-249-441-11	CARBON 100K 5% 1/4W	
R754	1-247-903-00	CARBON 1M 5% 1/4W	
R755	1-247-903-00	CARBON 1M 5% 1/4W	
R756	1-247-903-00	CARBON 1M 5% 1/4W	
R757	1-247-903-00	CARBON 1M 5% 1/4W	
R758	1-249-427-11	CARBON 6.8K 5% 1/4W	
R759	1-247-903-00	CARBON 1M 5% 1/4W	
R760	1-247-903-00	CARBON 1M 5% 1/4W	
R761	1-247-895-00	CARBON 470K 5% 1/4W	
R762	1-249-421-11	CARBON 2.2K 5% 1/4W	
R764	1-249-425-11	CARBON 4.7K 5% 1/4W	
R766	1-247-887-00	CARBON 220K 5% 1/4W	
R849	1-249-389-11	CARBON 4.7 5% 1/4W	(G,IT)
R899	1-249-389-11	CARBON 4.7 5% 1/4W	(G,IT)
R1000	1-249-395-11	CARBON 15 5% 1/4W	(E,AUS,EA,MX,MY,SP)

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description	Remark
RV1	1-238-601-11	RES, ADJ, CARBON 22K	(FM TUND LIGHTING LEVEL)
RV701	1-223-652-11	RES, VAR, CARBON 100K/100K(MAIN VOLUME)	

< RELAY >

Ref. No.	Part No.	Description	Remark
RY801	1-515-920-11	RELAY (24V)	

< SWITCH >

Ref. No.	Part No.	Description	Remark
S601	1-692-884-11	SWITCH, SLIDE(SPEAKER)	(AEP,G,UK,IT,EE)

< TRANSFORMER >

Ref. No.	Part No.	Description	Remark
T1	1-402-424-11	COIL (ANT,SW3)(H650:EXCEPT AEP,G)	
T2	1-402-960-11	COIL (OSC SW3)(H650:EXCEPT AEP,G)	

MAIN MD(AX) MD(BX)

Ref. No.	Part No.	Description	Remark
		< TERMINAL >	
TB1	1-537-488-11	TERMINAL BOARD (ANT)(AEP,G,UK,IT,EE)	
TB1	1-537-238-21	TERMINAL BOARD (H650:EXCEPT AEP,G/H650M:Canadian)	
		< TERMINAL >	
TM801	1-537-238-11	TERMINAL BOARD(SPEAKER)	
		< CRYSTAL >	
X1	1-579-585-11	VIBRATOR, CRYSTAL(7.2MHz)	
X2	1-577-075-11	OSCILLATOR, CERAMIC(456kHz)	
X3	1-579-777-11	DISCRIMINATOR, CERAMIC(10.7MHz)	

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Ref. No.	Part No.	Description	Remark
*	A-2006-623-A	MD(AX)BOARD, COMPLETE ********************	
		< CAPACITOR >	
C11	1-163-131-00	CERAMIC CHIP 390PF 5%	50V
C12	1-136-157-00	FILM 0.022uF 5%	50V
C13	1-124-234-00	ELECT 22uF 20%	16V
C18	1-163-117-00	CERAMIC CHIP 100PF 5%	50V
C21	1-163-131-00	CERAMIC CHIP 390PF 5%	50V
C22	1-136-157-00	FILM 0.022uF 5%	50V
C23	1-124-234-00	ELECT 22uF 20%	16V
C28	1-163-117-00	CERAMIC CHIP 100PF 5%	50V
C31	1-124-234-00	ELECT 22uF 20%	16V
C32	1-124-234-00	ELECT 22uF 20%	16V
C72	1-124-499-11	ELECT, NONPOLAR 1uF 20%	50V
		< JACK >	
* CNJ31	1-580-782-11	CONNECTOR, BOARD TO BOARD	
* CNJ72	1-580-411-11	SOCKET, CONNECTOR 4P	
		< CONNECTOR >	
* CNP32	1-580-772-11	PIN, CONNECTOR (PC BOARD) 4P	
* CNP71	1-564-719-11	PIN, CONNECTOR (SMALL TYPE) 3P	
		< IC >	
IC31A	8-759-106-02	IC UPC4570G2	
		< JUMPER RESISTOR >	
JW1	1-216-295-00	METAL CHIP 0 5% 1/10W	
JW51	1-216-296-91	METAL GLAZE 0 5% 1/8W	
JW52	1-216-296-91	METAL GLAZE 0 5% 1/8W	
JW53	1-216-296-91	METAL GLAZE 0 5% 1/8W	
JW54	1-216-296-91	METAL GLAZE 0 5% 1/8W	
		< TRANSISTOR >	
Q71A	8-729-216-22	TRANSISTOR 2SA1162-G	
		< RESISTOR >	
R11	1-216-099-00	METAL CHIP 120K 5% 1/10W	
R12	1-216-025-00	METAL CHIP 100 5% 1/10W	
R13	1-216-100-00	METAL GLAZE 130K 5% 1/10W	
R14	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R21	1-216-099-00	METAL CHIP 120K 5% 1/10W	
R22	1-216-025-00	METAL CHIP 100 5% 1/10W	
R23	1-216-100-00	METAL GLAZE 130K 5% 1/10W	
R24	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R31	1-216-033-00	METAL CHIP 220 5% 1/10W	
R32	1-216-033-00	METAL CHIP 220 5% 1/10W	
R71	1-216-082-00	METAL GLAZE 24K 5% 1/10W	
R72	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R73	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R74	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
		< VARIABLE RESISTOR >	
RV11A	1-241-761-11	RES, ADJ, CARBON 1K(PB(L)LEVEL)	
RV21A	1-241-761-11	RES, ADJ, CARBON 1K(PB(R)LEVEL)	
RV71A	1-241-630-11	RES, ADJ, CARBON 10K(NORMAL SPEED)	
RV72A	1-241-630-11	RES, ADJ, CARBON 10K(HIGHT SPEED)	

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Ref. No.	Part No.	Description	Remark
*	A-2007-134-A	MD(BX)BOARD, COMPLETE ********************	
		< CAPACITOR >	
C11	1-163-131-00	CERAMIC CHIP 390PF 5%	50V
C12	1-163-117-00	CERAMIC CHIP 100PF 5%	50V
C13	1-136-153-00	FILM 0.01uF 5%	50V
C14	1-126-177-11	ELECT 100uF 20%	10V
C15	1-124-234-00	ELECT 22uF 20%	16V
C16	1-136-273-91	FILM 75PF 5%	630V
C17	1-164-080-11	CERAMIC 390PF 10%	50V
C18	1-163-103-00	CERAMIC CHIP 27PF 5%	50V
C21	1-163-131-00	CERAMIC CHIP 390PF 5%	50V
C22	1-163-117-00	CERAMIC CHIP 100PF 5%	50V
C23	1-136-153-00	FILM 0.01uF 5%	50V
C24	1-126-177-11	ELECT 100uF 20%	10V
C25	1-124-234-00	ELECT 22uF 20%	16V
C26	1-136-273-91	FILM 75PF 5%	630V
C27	1-164-080-11	CERAMIC 390PF 10%	50V
C28	1-163-103-00	CERAMIC CHIP 27PF 5%	50V
C31	1-124-234-00	ELECT 22uF 20%	16V
C32	1-124-234-00	ELECT 22uF 20%	16V
C33	1-124-234-00	ELECT 22uF 20%	16V

Ref. No.	Part No.	Description			Remark
C51	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C52	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C53	1-163-022-00	CERAMIC CHIP	0.012uF	10%	50V
C54	1-136-559-11	FILM	0.0047uF	5%	630V
C56	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C57	1-164-346-11	CERAMIC CHIP	1uF		16V
C58	1-163-024-00	CERAMIC CHIP	0.018uF	10%	50V
C72	1-124-499-11	ELECT, NONPOLAR	1uF	20%	50V
		< CONNECTOR >			
* CNJ31	1-580-782-11	CONNECTOR, BOARD TO BOARD			
* CNJ33	1-580-782-11	CONNECTOR, BOARD TO BOARD			
* CNJ72	1-580-411-11	SOCKET, CONNECTOR 4P			
		< CONNECTOR >			
* CNP32	1-580-781-11	PIN, CONNECTOR (PC BOARD) 7P			
* CNP71	1-564-719-11	PIN, CONNECTOR (SMALL TYPE) 3P			
		< IC >			
IC32	8-759-106-02	IC	UPC4570G2		
IC31B	8-759-249-21	IC	uPC1330GR-T1		
		< JUMPER RESISTOR >			
JW1	1-216-295-00	METAL CHIP	0	5%	1/10W
JW2	1-216-295-00	METAL CHIP	0	5%	1/10W
JW11	1-216-296-91	METAL GLAZE	0	5%	1/8W
JW12	1-216-296-91	METAL GLAZE	0	5%	1/8W
JW13	1-216-296-91	METAL GLAZE	0	5%	1/8W
JW14	1-216-296-91	METAL GLAZE	0	5%	1/8W
JW15	1-216-296-91	METAL GLAZE	0	5%	1/8W
JW16	1-216-296-91	METAL GLAZE	0	5%	1/8W
JW17	1-216-296-91	METAL GLAZE	0	5%	1/8W
JW18	1-216-296-91	METAL GLAZE	0	5%	1/8W
JW19	1-216-296-91	METAL GLAZE	0	5%	1/8W
JW20	1-216-296-91	METAL GLAZE	0	5%	1/8W
JW21	1-216-296-91	METAL GLAZE	0	5%	1/8W
JW22	1-216-296-91	METAL GLAZE	0	5%	1/8W
JW23	1-216-296-91	METAL GLAZE	0	5%	1/8W
JW24	1-216-296-91	METAL GLAZE	0	5%	1/8W
JW25	1-216-296-91	METAL GLAZE	0	5%	1/8W
JW26	1-216-296-91	METAL GLAZE	0	5%	1/8W
JW27	1-216-296-91	METAL GLAZE	0	5%	1/8W
		< COIL >			
L11	1-410-780-11	INDUCTOR	27mH		
L21	1-410-780-11	INDUCTOR	27mH		

Ref. No.	Part No.	Description			Remark
		< TRANSISTOR >			
Q51	8-729-011-92	TRANSISTOR	2SC2001TP-K1K2		
Q52	8-729-011-92	TRANSISTOR	2SC2001TP-K1K2		
Q53	8-729-111-29	TRANSISTOR	2SD1616A-K		
Q71B	8-729-216-22	TRANSISTOR	2SA1162-G		
		< RESISTOR >			
R11	1-216-099-00	METAL CHIP	120K	5%	1/10W
R12	1-216-033-00	METAL CHIP	220	5%	1/10W
R13	1-216-081-00	METAL CHIP	22K	5%	1/10W
R14	1-216-075-00	METAL CHIP	12K	5%	1/10W
R15	1-216-107-00	METAL CHIP	270K	5%	1/10W
R16	1-249-430-11	CARBON	12K	5%	1/4W
R21	1-216-099-00	METAL CHIP	120K	5%	1/10W
R22	1-216-033-00	METAL CHIP	220	5%	1/10W
R23	1-216-081-00	METAL CHIP	22K	5%	1/10W
R24	1-216-075-00	METAL CHIP	12K	5%	1/10W
R25	1-216-107-00	METAL CHIP	270K	5%	1/10W
R26	1-249-430-11	CARBON	12K	5%	1/4W
R31	1-216-033-00	METAL CHIP	220	5%	1/10W
R32	1-216-033-00	METAL CHIP	220	5%	1/10W
R33	1-216-073-00	METAL CHIP	10K	5%	1/10W
R41	1-249-393-11	CARBON	10	5%	1/4W
R42	1-249-393-11	CARBON	10	5%	1/4W
R51	1-216-075-00	METAL CHIP	12K	5%	1/10W
R52	1-216-075-00	METAL CHIP	12K	5%	1/10W
R53	1-216-073-00	METAL CHIP	10K	5%	1/10W
R54	1-216-309-00	METAL CHIP	5.6	5%	1/10W
R55	1-216-309-00	METAL CHIP	5.6	5%	1/10W
R56	1-216-298-00	METAL CHIP	2.2	5%	1/10W
R71	1-216-082-00	METAL GLAZE	24K	5%	1/10W
R72	1-216-081-00	METAL CHIP	22K	5%	1/10W
R73	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R74	1-216-089-91	METAL GLAZE	47K	5%	1/10W
		< VARIABLE RESISTOR >			
RV12	1-238-551-11	RES, ADJ, CARBON 220K(REC BIAS(L))			
RV22	1-238-551-11	RES, ADJ, CARBON 220K(REC BIAS(R))			
RV11B	1-241-761-11	RES, ADJ, CARBON 1K(PB(L)LEVEL)			
RV21B	1-241-761-11	RES, ADJ, CARBON 1K(PB(R)LEVEL)			
RV71B	1-241-630-11	RES, ADJ, CARBON 10K(NORMAL SPEED)			
RV72B	1-241-630-11	RES, ADJ, CARBON 10K(HIGHT SPEED)			
		< TRANSFORMER >			
T51	1-406-419-11	COIL, BIAS OSCILLATION			

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POWER

Ref. No.	Part No.	Description	Remark
*	A-4369-044-A	POWER BOARD, COMPLETE(H650:EXCEPT AEP, G) *********************	
*	A-4365-992-A	POWER BOARD, COMPLETE(Canadian) *********************	
*	A-4369-000-A	POWER BOARD, COMPLETE(AEP, EE) *********************	
*	A-4369-008-A	POWER BOARD, COMPLETE(G, IT) *********************	
*	A-4369-020-A	POWER BOARD, COMPLETE(UK) *********************	

< CAPACITOR >

Ref. No.	Part No.	Description				Remark
C801	1-162-217-31	CERAMIC	56PF	5%	50V	(G, IT)
C802	1-124-903-11	ELECT	1uF	20%	50V	
C803	1-162-290-31	CERAMIC	470PF	10%	50V	
C804	1-162-282-31	CERAMIC	100PF	10%	50V	(EXCEPT, G, IT)
C804	1-162-294-31	CERAMIC	0.001uF	10%	50V	(G, IT)
C805	1-124-910-11	ELECT	47uF	20%	50V	
C807	1-124-910-11	ELECT	47uF	20%	50V	
C808	1-164-159-11	CERAMIC	0.1uF		50V	
C809	1-164-159-11	CERAMIC	0.1uF		50V	
C831	1-124-917-11	ELECT	33uF	20%	63V	
C832	1-124-917-11	ELECT	33uF	20%	63V	
C833	1-136-161-00	FILM	0.047uF	5%	50V	
C834	1-162-286-31	CERAMIC	220PF	10%	50V	(G, IT)
C851	1-162-217-31	CERAMIC	56PF	5%	50V	(G, IT)
C852	1-124-903-11	ELECT	1uF	20%	50V	
C853	1-162-290-31	CERAMIC	470PF	10%	50V	
C854	1-162-282-31	CERAMIC	100PF	10%	50V	(EXCEPT, G, IT)
C854	1-162-294-31	CERAMIC	0.001uF	10%	50V	(G, IT)
C855	1-124-910-11	ELECT	47uF	20%	50V	
C857	1-124-910-11	ELECT	47uF	20%	50V	
C858	1-164-159-11	CERAMIC	0.1uF		50V	
C859	1-164-159-11	CERAMIC	0.1uF		50V	
C871	1-124-907-11	ELECT	10uF	20%	50V	
C872	1-126-176-11	ELECT	220uF	20%	10V	
C873	1-124-902-00	ELECT	0.47uF	20%	50V	
C874	1-124-916-11	ELECT	22uF	20%	63V	
C901	1-126-224-11	ELECT	4700uF	20%	42V	
C902	1-126-224-11	ELECT	4700uF	20%	42V	
C903	1-164-159-11	CERAMIC	0.1uF		50V	
C904	1-164-159-11	CERAMIC	0.1uF		50V	
C906	1-126-937-11	ELECT	4700uF	20%	16V	
C907	1-124-887-00	ELECT	3300uF	20%	16V	
C908	1-124-925-11	ELECT	2.2uF	20%	100V	
C909	1-124-925-11	ELECT	2.2uF	20%	100V	
C910	1-124-925-11	ELECT	2.2uF	20%	100V	
C911	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C912	1-124-903-11	ELECT	1uF	20%	50V	
C913	1-124-925-11	ELECT	2.2uF	20%	100V	
C914	1-126-935-11	ELECT	470uF	20%	16V	
C915	1-126-935-11	ELECT	470uF	20%	16V	
C916	1-124-907-11	ELECT	10uF	20%	50V	
C917	1-124-477-11	ELECT	47uF	20%	25V	
C918	1-124-477-11	ELECT	47uF	20%	25V	
C919	1-124-907-11	ELECT	10uF	20%	50V	
C920	1-124-903-11	ELECT	1uF	20%	50V	
C922	1-124-910-11	ELECT	47uF	20%	50V	
C923	1-124-910-11	ELECT	47uF	20%	50V	
C949	1-161-379-00	CERAMIC	0.01uF	20%	25V	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
* CN801	1-564-705-11	PIN, CONNECTOR (SMALL TYPE) 3P	
CN901	1-764-308-11	HOUSING, CONNECTOR(PC BOARD)8P	
CN902	1-564-510-11	PLUG, CONNECTOR 7P	
CN903	1-695-695-11	CONNECTOR, FFC/FPC 11P	
CN904	1-695-330-31	PIN, CONNECTOR (PC BOARD) 7P	

< DIODE >

Ref. No.	Part No.	Description		Remark
D801	8-719-987-63	DIODE	1N4148M	
D851	8-719-987-63	DIODE	1N4148M	
D901	8-719-987-63	DIODE	1N4148M	
D902	8-719-987-63	DIODE	1N4148M	
D903	8-719-200-82	DIODE	11ES2	
D904	8-719-200-82	DIODE	11ES2	
D905	8-719-200-82	DIODE	11ES2	
D906	8-719-200-82	DIODE	11ES2	
D909	8-719-987-63	DIODE	1N4148M	
D910	8-719-010-75	DIODE	UZ-12BSC-TP	
D911	8-719-109-93	DIODE	RD6.2ESB2	
D912	8-719-013-67	DIODE	UZ-30BSD-TP	

< IC >

Ref. No.	Part No.	Description		Remark
IC801	8-749-900-96	IC	STK-4142MK2(AEP, G, UK, IT, EE)	
IC801	8-749-920-09	IC	STK-4152MK2K (E, AUS, EA, MX, MY, SP, Canadian)	
IC802	8-759-111-68	IC	UPC1237HA	
IC901	8-759-602-66	IC	M5230L-A	

< TRANSISTOR >

Ref. No.	Part No.	Description		Remark
Q801	8-729-140-84	TRANSISTOR	2SC1841-PAFAEA	
Q851	8-729-140-84	TRANSISTOR	2SC1841-PAFAEA	
Q871	8-729-900-63	TRANSISTOR	DTA124ES	
Q901	8-729-900-89	TRANSISTOR	DTC144ES	
Q902	8-729-141-83	TRANSISTOR	2SB1094-LK	
Q903	8-729-119-76	TRANSISTOR	2SA1175-HFE	

Ref. No.	Part No.	Description		Remark
Q904	8-729-209-15	TRANSISTOR	2SD2012	
Q905	8-729-119-78	TRANSISTOR	2SC403SP-51	
Q906	8-729-018-60	TRANSISTOR	2SD2012-LC	
Q907	8-729-209-15	TRANSISTOR	2SD2012	
Q908	8-729-900-80	TRANSISTOR	DTC114ES	
Q909	8-729-900-80	TRANSISTOR	DTC114ES	
Q910	8-729-018-59	TRANSISTOR	2SB1375-LC	

< RESISTOR >

Ref. No.	Part No.	Description				Remark
R801	1-249-417-11	CARBON	1K	5%	1/4W	
R802	1-249-438-11	CARBON	56K	5%	1/4W	
R803	1-249-414-11	CARBON	560	5%	1/4W	
R804	1-249-438-11	CARBON	56K	5%	1/4W	
⚠R805	1-212-849-00	FUSIBLE	4.7	5%	1/4W	F
R806	1-249-421-11	CARBON	2.2K	5%	1/4W	
R807	1-247-756-11	CARBON	2.2K	5%	1/2W	
R808	1-249-417-11	CARBON	1K	5%	1/4W	
R809	1-249-431-11	CARBON	15K	5%	1/4W	
R810	1-249-441-11	CARBON	100K	5%	1/4W	
R811	1-217-151-00	RES, METAL PLATE		0.22	2W	
R812	1-249-393-11	CARBON	10	5%	1/4W	
R813	1-249-438-11	CARBON	56K	5%	1/4W	
⚠R831	1-212-881-11	FUSIBLE	100	5%	1/4W	F
⚠R832	1-212-881-11	FUSIBLE	100	5%	1/4W	F
R851	1-249-417-11	CARBON	1K	5%	1/4W	
R852	1-249-438-11	CARBON	56K	5%	1/4W	
R853	1-249-414-11	CARBON	560	5%	1/4W	
R854	1-249-438-11	CARBON	56K	5%	1/4W	
⚠R855	1-212-881-11	FUSIBLE	100	5%	1/4W	F
R856	1-249-421-11	CARBON	2.2K	5%	1/4W	
R857	1-247-756-11	CARBON	2.2K	5%	1/2W	
R858	1-249-417-11	CARBON	1K	5%	1/4W	
R859	1-249-431-11	CARBON	15K	5%	1/4W	
R860	1-249-441-11	CARBON	100K	5%	1/4W	
R861	1-217-151-00	RES, METAL PLATE		0.22	2W	
R862	1-249-393-11	CARBON	10	5%	1/4W	
R863	1-249-437-11	CARBON	47K	5%	1/4W	
R871	1-249-433-11	CARBON	22K	5%	1/4W	
R872	1-249-441-11	CARBON	100K	5%	1/4W	
R873	1-249-425-11	CARBON	4.7K	5%	1/4W	
R874	1-249-431-11	CARBON	15K	5%	1/4W	
R875	1-249-439-11	CARBON	68K	5%	1/4W	
R876	1-249-422-11	CARBON	2.7K	5%	1/4W	
R901	1-249-417-11	CARBON	1K	5%	1/4W	
R902	1-249-417-11	CARBON	1K	5%	1/4W	
R904	1-249-429-11	CARBON	10K	5%	1/4W	
R905	1-247-903-00	CARBON	1M	5%	1/4W	
R906	1-249-409-11	CARBON	220	5%	1/4W	
R907	1-249-409-11	CARBON	220	5%	1/4W	
R908	1-247-811-31	CARBON	150	5%	1/4W	
R909	1-247-811-31	CARBON	150	5%	1/4W	
R910	1-249-431-11	CARBON	15K	5%	1/4W	
R911	1-249-431-11	CARBON	15K	5%	1/4W	
R912	1-249-429-11	CARBON	10K	5%	1/4W	
R913	1-249-423-11	CARBON	3.3K	5%	1/4W	
⚠R914	1-212-889-00	FUSIBLE	220	5%	1/4W	F
R915	1-249-420-11	CARBON	1.8K	5%	1/4W	
⚠R916	1-212-998-00	FUSIBLE	470	5%	1/2W	F
⚠R917	1-217-371-00	FUSIBLE	0.47	5%	1/4W	F
⚠R918	1-212-853-00	FUSIBLE	6.8	5%	1/4W	F
R919	1-249-413-11	CARBON	470	5%	1/4W	
R921	1-249-417-11	CARBON	1K	5%	1/4W	
⚠R922	1-212-881-11	FUSIBLE	100	5%	1/4W	F
R923	1-249-421-11	CARBON	2.2K	5%	1/4W	

****

* 1-651-089-11 PS BOARD

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< CAPACITOR >

Ref. No.	Part No.	Description		Remark
C951	1-164-159-11	CERAMIC	0.1uF	50V
C952	1-164-159-11	CERAMIC	0.1uF	50V

< CONNECTOR >

Ref. No.	Part No.	Description
CN951	1-764-309-11	PIN, CONNECTOR (PC BOARD) 8P
* CN952	1-564-321-00	PIN, CONNECTOR 2P

< DIODE >

Ref. No.	Part No.	Description	
D951	8-719-312-09	DIODE	RBA-402

< FUSE >

Ref. No.	Part No.	Description
⚠F951	1-532-215-00	FUSE(T800mA/250V)(EXCEPT Canadian)
⚠F951	1-576-104-11	FUSE(2A/250V)(Canadian)
⚠F952	1-532-259-00	FUSE(T1.6A/250V)(E, EA, MX, MY, SP)

< FUSE HOLDER >

Ref. No.	Part No.	Description
* FH911	1-533-293-11	FUSE HOLDER
* FH912	1-533-293-11	FUSE HOLDER
* FH913	1-533-293-11	FUSE HOLDER(E, EA, MX, MY, SP)
* FH914	1-533-293-11	FUSE HOLDER(E, EA, MX, MY, SP)

< RESISTOR >

Ref. No.	Part No.	Description				Remark
⚠R951	1-219-134-11	FUSIBLE	0.1	10%	1/4W	
⚠R952	1-219-134-11	FUSIBLE	0.1	10%	1/4W	
R953	1-202-725-00	SOLID	3.3M	10%	1/2W	(Canadian)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

PS SW SW-A

< SWITCH >

Ref. No.	Part No.	Description	Remark
⚠S951	1-572-675-11	SWITCH, POWER VOLTAGE CHANGE (110-120/220-240V)(E, EA, MX, MY, SP)	

< TRANSFORMER >

Ref. No.	Part No.	Description	Remark
⚠PT951	1-423-966-11	TRANSFORMER, POWER(Canadian)	
⚠PT951	1-423-967-11	TRANSFORMER, POWER(AEP, G, IT, EE)	
⚠PT951	1-423-968-11	TRANSFORMER, POWER(AUS, UK)	
⚠PT951	1-423-969-11	TRANSFORMER, POWER(E, EA, MX, MY, SP)	

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Ref. No.	Part No.	Description	Remark
*	A-4369-047-A	SW BOARD, COMPLETE(E, AUS, EA, MX, MY, SP) ******************	
*	A-4365-995-A	SW BOARD, COMPLETE(Canadian) ******************	
*	A-4369-003-A	SW BOARD, COMPLETE(AEP, EE) ******************	
*	A-4369-011-A	SW BOARD, COMPLETE(G, IT) ******************	
*	A-4369-023-A	SW BOARD, COMPLETE(UK) ******************	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN3001	1-695-738-11	CONNECTOR, FFC/FPC 18P	
CN3002	1-580-482-11	SOCKET, CONNECTOR 7P	

< DIODE >

Ref. No.	Part No.	Description	Remark
D3007	8-719-032-83	LED SEL5220S-TP(REC)	
D3008	8-719-033-06	LED SEL5920A (PAUSE)	
D3009	8-719-032-83	LED SEL5220S-TP(CD SYNCRO)	
D3010	8-719-032-83	LED SEL5220S-TP(HIGHT SPEED DUBBING)	
D3011	8-719-032-87	LED SEL5420S-TP(FWD)	
D3012	8-719-032-87	LED SEL5420S-TP(REV)	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R3001	1-247-807-31	CARBON 100 5% 1/4W	
R3002	1-249-406-11	CARBON 120 5% 1/4W	
R3003	1-249-406-11	CARBON 120 5% 1/4W	
R3004	1-247-811-31	CARBON 150 5% 1/4W	
R3005	1-249-408-11	CARBON 180 5% 1/4W	
R3006	1-249-409-11	CARBON 220 5% 1/4W	
R3007	1-249-410-11	CARBON 270 5% 1/4W	
R3008	1-249-411-11	CARBON 330 5% 1/4W	
R3009	1-249-413-11	CARBON 470 5% 1/4W	
R3010	1-249-414-11	CARBON 560 5% 1/4W	
R3014	1-247-811-31	CARBON 150 5% 1/4W	
R3015	1-249-409-11	CARBON 220 5% 1/4W	
R3016	1-247-840-00	CARBON 2.4K 5% 1/4W	
R3017	1-249-416-11	CARBON 820 5% 1/4W	
R3018	1-249-418-11	CARBON 1.2K 5% 1/4W	
R3020	1-249-426-11	CARBON 5.6K 5% 1/4W	
R3022	1-249-420-11	CARBON 1.8K 5% 1/4W	
R3023	1-249-414-11	CARBON 560 5% 1/4W	
R3024	1-249-416-11	CARBON 820 5% 1/4W	
R3027	1-249-417-11	CARBON 1K 5% 1/4W	
R3028	1-249-426-11	CARBON 5.6K 5% 1/4W	
R3029	1-249-430-11	CARBON 12K 5% 1/4W	

< SWITCH >

Ref. No.	Part No.	Description	Remark
S3001	1-572-184-11	SWITCH, KEY BOARD(■STOP)	
S3002	1-572-184-11	SWITCH, KEY BOARD(OPEN/CLOSE)	
S3003	1-572-184-11	SWITCH, KEY BOARD(▶PLAY)	
S3004	1-572-184-11	SWITCH, KEY BOARD(FF)	
S3005	1-572-184-11	SWITCH, KEY BOARD(REW)	
S3006	1-572-184-11	SWITCH, KEY BOARD(EDIT)	
S3007	1-572-184-11	SWITCH, KEY BOARD(CLEAR)	
S3008	1-572-184-11	SWITCH, KEY BOARD(CHECK)	
S3009	1-572-184-11	SWITCH, KEY BOARD(TIME)	
S3010	1-572-184-11	SWITCH, KEY BOARD(REPEAT)	
S3011	1-572-184-11	SWITCH, KEY BOARD(PROGRAM)	
S3012	1-572-184-11	SWITCH, KEY BOARD(SHUFFLE)	
S3013	1-572-184-11	SWITCH, KEY BOARD(CONTINUE)	
S3015	1-572-184-11	SWITCH, KEY BOARD(■STOP)	
S3018	1-572-184-11	SWITCH, KEY BOARD(●REC)	
S3019	1-572-184-11	SWITCH, KEY BOARD(HIGHT SPEED DUBBING)	
S3020	1-572-184-11	SWITCH, KEY BOARD(CD SYNCHRO)	
S3022	1-572-184-11	SWITCH, KEY BOARD(❙❙PAUSE)	
S3023	1-572-184-11	SWITCH, KEY BOARD(●REC)	
S3024	1-572-184-11	SWITCH, KEY BOARD(FF)	
S3025	1-572-378-11	SWITCH, SLIDE(DIRECTION)	
S3026	1-572-184-11	SWITCH, KEY BOARD(FWD)	
S3027	1-572-184-11	SWITCH, KEY BOARD(REW)	
S3028	1-572-347-31	SWITCH, SLIDE(DOLBY NR)	

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Ref. No.	Part No.	Description	Remark
*	1-638-020-11	SW-A BOARD **********	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
* CNP81	1-568-850-11	SOCKET, CONNECTOR 7P	

< IC >

Ref. No.	Part No.	Description	Remark
IC81A	8-749-924-10	IC PHONT REFLECTOR NJL5165K-B(H1)	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R84	1-249-417-11	CARBON 1K 5% 1/4W	
R85	1-249-408-11	CARBON 180 5% 1/4W	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

< SWITCH >

Ref. No.	Part No.	Description	Remark
S81A	1-571-958-11	SWITCH, PUSH (1 KEY)(STOP DET)	
S82A	1-571-281-21	SWITCH, LEAF (CrO2 DET)	
S86A	1-571-281-21	SWITCH, LEAF (HALF DET)	

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* 1-638-020-11 SW-B BOARD

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< CONNECTOR >

Ref. No.	Part No.	Description	Remark
* CNP81	1-568-850-11	SOCKET, CONNECTOR 7P	

< IC >

Ref. No.	Part No.	Description	Remark
IC81B	8-749-924-10	IC PHONT REFLECTOR NJL5165K-B(H1)	

< RESISTOR >

Ref. No.	Part No.	Description				Remark
R81	1-249-414-11	CARBON	560	5%	1/4W	
R82	1-247-818-91	CARBON	300	5%	1/4W	
R83	1-247-834-11	CARBON	1.3K	5%	1/4W	
R84	1-249-417-11	CARBON	1K	5%	1/4W	
R85	1-249-408-11	CARBON	180	5%	1/4W	

< SWITCH >

Ref. No.	Part No.	Description	Remark
S81B	1-571-958-11	SWITCH, PUSH (1 KEY)(STOP DET)	
S82B	1-571-281-21	SWITCH, LEAF (CrO2 DET)	
S84B	1-571-281-21	SWITCH, LEAF (ERASE PROOF)(SIDE A)	
S85B	1-571-281-21	SWITCH, LEAF (ERASE PROOF)(SIDE B)	
S86B	1-571-281-21	SWITCH, LEAF (HALF DET)	

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* A-4365-994-A TC BOARD, COMPLETE(Canadian)

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* A-4369-002-A TC BOARD, COMPLETE(AEP, EE)

****

* A-4369-010-A TC BOARD, COMPLETE(G, IT)

****

* A-4369-022-A TC BOARD, COMPLETE(UK)

****

* A-4369-046-A TC BOARD, COMPLETE(E, AUS, EA, MX, MY, SP)

****

< CAPACITOR >

Ref. No.	Part No.	Description				Remark
C301	1-124-903-11	ELECT	1uF	20%	50V	
C302	1-124-443-00	ELECT	100uF	20%	10V	
C303	1-124-907-11	ELECT	10uF	20%	50V	
C304	1-124-126-00	ELECT	47uF	20%	10V	
C401	1-162-294-31	CERAMIC	0.001uF	10%	50V(G, IT)	
C402	1-162-294-31	CERAMIC	0.001uF	10%	50V(G, IT)	
C403	1-137-368-11	FILM	0.0047uF	5%	50V	
C404	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C405	1-124-903-11	ELECT	1uF	20%	50V	
C406	1-124-907-11	ELECT	10uF	20%	50V	
C407	1-136-165-00	FILM	0.1uF	5%	50V	
C408	1-124-907-11	ELECT	10uF	20%	50V	
C409	1-124-903-11	ELECT	1uF	20%	50V	
C410	1-124-902-00	ELECT	0.47uF	20%	50V	
C411	1-124-907-11	ELECT	10uF	20%	50V	
C421	1-164-159-11	CERAMIC	0.1uF		50V	
C422	1-124-584-00	ELECT	100uF	20%	10V	
C423	1-162-290-31	CERAMIC	470PF	10%	50V	
C424	1-164-159-11	CERAMIC	0.1uF		50V	
C441	1-164-159-11	CERAMIC	0.1uF		50V	
C442	1-124-584-00	ELECT	100uF	20%	10V	
C443	1-162-290-31	CERAMIC	470PF	10%	50V	
C451	1-162-294-31	CERAMIC	0.001uF	10%	50V(G, IT)	
C452	1-162-294-31	CERAMIC	0.001uF	10%	50V(G, IT)	
C453	1-137-368-11	FILM	0.0047uF	5%	50V	
C454	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C455	1-124-903-11	ELECT	1uF	20%	50V	
C456	1-124-907-11	ELECT	10uF	20%	50V	
C457	1-136-165-00	FILM	0.1uF	5%	50V	
C458	1-124-907-11	ELECT	10uF	20%	50V	
C459	1-124-903-11	ELECT	1uF	20%	50V	
C460	1-124-902-00	ELECT	0.47uF	20%	50V	
C461	1-124-907-11	ELECT	10uF	20%	50V	
C471	1-126-101-11	ELECT	100uF	20%	16V	
C472	1-126-101-11	ELECT	100uF	20%	16V	
C473	1-162-286-31	CERAMIC	220PF	10%	50V(G, IT)	
C474	1-124-907-11	ELECT	10uF	20%	50V	
C475	1-164-159-11	CERAMIC	0.1uF		50V	
C476	1-124-584-00	ELECT	100uF	20%	10V	
C477	1-124-465-00	ELECT	0.47uF	20%	50V	
C478	1-161-375-00	CERAMIC	0.0022uF	20%	50V	
C479	1-162-286-31	CERAMIC	220PF	10%	50V(G, IT)	
C480	1-161-377-00	CERAMIC	0.0047uF	30%	16V	
C481	1-162-286-31	CERAMIC	220PF	10%	50V(G, IT)	
C482	1-124-443-00	ELECT	100uF	20%	10V	
C483	1-164-159-11	CERAMIC	0.1uF		50V	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN301	1-764-560-11	CONNECTOR, FFC/FPC 18P	
CN302	1-564-517-11	PLUG, CONNECTOR 2P	
* CN401	1-564-520-11	PLUG, CONNECTOR 5P	
CN402	1-580-783-11	CONNECTOR, BOARD TO BOARD	
CN403	1-580-783-11	CONNECTOR, BOARD TO BOARD	
CN404	1-580-783-11	CONNECTOR, BOARD TO BOARD	
CN405	1-750-739-11	CONNECTOR, FFC/FPC 7P	
CN406	1-750-739-11	CONNECTOR, FFC/FPC 7P	
CN407	1-764-302-11	HOUSING, CONNECTOR(PC BOARD)24P	

TC

Ref. No.	Part No.	Description	Remark
CN408	1-695-368-31	PIN, CONNECTOR (PC BOARD) 7P	(E, AUS, EA, MX, MY, SP)
CN409	1-691-645-11	SOCKET, CONNECTOR 9P	

< DIODE >

Ref. No.	Part No.	Description	Remark
D301	8-719-200-82	DIODE 11ES2	
D302	8-719-200-82	DIODE 11ES2	
D303	8-719-987-63	DIODE 1N4148M	
D381	8-719-047-27	DIODE SEL4425GM-TP7	
D401	8-719-987-63	DIODE 1N4148M	
D402	8-719-987-63	DIODE 1N4148M	
D498	8-719-987-63	DIODE 1N4148M	
D499	8-719-987-63	DIODE 1N4148M	

< IC >

Ref. No.	Part No.	Description	Remark
IC301	8-759-099-08	IC M50964-260FP	
IC302	8-759-165-82	IC PST600E-T	
IC401	8-759-098-75	IC HA12171NT	
IC402	8-759-266-35	IC TA8242K	

< COIL >

Ref. No.	Part No.	Description	Remark
L401	1-410-482-31	INDUCTOR 100uH	
L402	1-410-482-31	INDUCTOR 100uH	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q301	8-729-119-78	TRANSISTOR 2SC403SP-51	
Q302	8-729-900-80	TRANSISTOR DTC114ES	
Q303	8-729-900-65	TRANSISTOR DTA144ES	
Q304	8-729-900-61	TRANSISTOR DTA114ES	
Q305	8-729-900-65	TRANSISTOR DTA144ES	
Q306	8-729-900-65	TRANSISTOR DTA144ES	
Q307	8-729-900-65	TRANSISTOR DTA144ES	
Q308	8-729-900-65	TRANSISTOR DTA144ES	
Q309	8-729-900-89	TRANSISTOR DTC144ES	
Q310	8-729-900-65	TRANSISTOR DTA144ES	
Q311	8-729-900-89	TRANSISTOR DTC144ES	
Q312	8-729-900-65	TRANSISTOR DTA144ES	
Q394	8-729-900-63	TRANSISTOR DTA124ES	
Q397	8-729-900-63	TRANSISTOR DTA124ES	
Q401	8-729-119-78	TRANSISTOR 2SC403SP-51	
Q411	8-729-119-78	TRANSISTOR 2SC403SP-51	
Q412	8-729-116-57	TRANSISTOR 2SB1068-K	
Q413	8-729-116-57	TRANSISTOR 2SB1068-K	
Q451	8-729-119-78	TRANSISTOR 2SC403SP-51	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R301	1-249-390-11	CARBON 5.6 5% 1/6W	
R302	1-249-429-11	CARBON 10K 5% 1/4W	
R303	1-249-421-11	CARBON 2.2K 5% 1/4W	
R304	1-249-421-11	CARBON 2.2K 5% 1/4W	
R305	1-249-441-11	CARBON 100K 5% 1/4W	
R306	1-249-429-11	CARBON 10K 5% 1/4W	
R307	1-249-425-11	CARBON 4.7K 5% 1/4W	
R308	1-249-425-11	CARBON 4.7K 5% 1/4W	
R309	1-249-429-11	CARBON 10K 5% 1/4W	
R310	1-249-429-11	CARBON 10K 5% 1/4W	
R311	1-247-903-00	CARBON 1M 5% 1/4W	
R312	1-247-895-00	CARBON 470K 5% 1/4W	
R313	1-247-895-00	CARBON 470K 5% 1/4W	
R314	1-249-410-11	CARBON 270 5% 1/4W	
R315	1-249-408-11	CARBON 180 5% 1/4W	
R316	1-249-410-11	CARBON 270 5% 1/4W	
R317	1-249-410-11	CARBON 270 5% 1/4W	
R320	1-249-410-11	CARBON 270 5% 1/4W	
R321	1-249-410-11	CARBON 270 5% 1/4W	
R322	1-249-429-11	CARBON 10K 5% 1/4W	
R390	1-249-417-11	CARBON 1K 5% 1/4W	
R391	1-249-417-11	CARBON 1K 5% 1/4W	
R392	1-249-417-11	CARBON 1K 5% 1/4W	
R393	1-249-417-11	CARBON 1K 5% 1/4W	
R394	1-249-417-11	CARBON 1K 5% 1/4W	
R401	1-249-430-11	CARBON 12K 5% 1/4W	
R402	1-249-431-11	CARBON 15K 5% 1/4W	
R403	1-249-427-11	CARBON 6.8K 5% 1/4W	
R404	1-249-429-11	CARBON 10K 5% 1/4W	
R411	1-249-417-11	CARBON 1K 5% 1/4W	
R412	1-249-425-11	CARBON 4.7K 5% 1/4W	
R413	1-249-425-11	CARBON 4.7K 5% 1/4W	
R414	1-249-425-11	CARBON 4.7K 5% 1/4W	
R415	1-249-437-11	CARBON 47K 5% 1/4W	
R423	1-247-807-31	CARBON 100 5% 1/4W	
R437	1-249-429-11	CARBON 10K 5% 1/4W	
R438	1-249-429-11	CARBON 10K 5% 1/4W	
R439	1-249-429-11	CARBON 10K 5% 1/4W	
R443	1-247-807-31	CARBON 100 5% 1/4W	
R451	1-249-430-11	CARBON 12K 5% 1/4W	
R452	1-249-431-11	CARBON 15K 5% 1/4W	
R453	1-249-427-11	CARBON 6.8K 5% 1/4W	
R454	1-249-429-11	CARBON 10K 5% 1/4W	
R461	1-249-417-11	CARBON 1K 5% 1/4W	
R462	1-249-425-11	CARBON 4.7K 5% 1/4W	
R463	1-249-425-11	CARBON 4.7K 5% 1/4W	
R464	1-249-425-11	CARBON 4.7K 5% 1/4W	
R465	1-249-437-11	CARBON 47K 5% 1/4W	
R471	1-215-451-00	METAL 18K 1% 1/6W	
R472	1-249-429-11	CARBON 10K 5% 1/4W	
R473	1-249-429-11	CARBON 10K 5% 1/4W	
R474	1-249-429-11	CARBON 10K 5% 1/4W	

Ref. No.	Part No.	Description	Remark
R475	1-249-425-11	CARBON 4.7K 5% 1/4W	
R476	1-249-429-11	CARBON 10K 5% 1/4W	
R477	1-249-429-11	CARBON 10K 5% 1/4W	
R478	1-249-417-11	CARBON 1K 5% 1/4W	
R479	1-247-864-11	CARBON 24K 5% 1/4W	
⚠R480	1-212-857-00	FUSIBLE 10 5% 1/4W	F
R481	1-247-885-00	CARBON 180K 5% 1/4W	
R482	1-249-432-11	CARBON 18K 5% 1/4W	
R483	1-249-429-11	CARBON 10K 5% 1/4W	
R484	1-247-852-11	CARBON 7.5K 5% 1/4W	
R485	1-247-864-11	CARBON 24K 5% 1/4W	
R486	1-249-441-11	CARBON 100K 5% 1/4W	
⚠R487	1-212-857-00	FUSIBLE 10 5% 1/4W	F
R488	1-249-429-11	CARBON 10K 5% 1/4W	
R489	1-249-415-11	CARBON 680 5% 1/4W	
R490	1-249-429-11	CARBON 10K 5% 1/4W	
R491	1-249-415-11	CARBON 680 5% 1/4W	
R492	1-249-429-11	CARBON 10K 5% 1/4W	
R493	1-249-425-11	CARBON 4.7K 5% 1/4W	
R494	1-249-434-11	CARBON 27K 5% 1/4W	
R495	1-249-429-11	CARBON 10K 5% 1/4W	
R496	1-249-434-11	CARBON 27K 5% 1/4W	
R497	1-249-425-11	CARBON 4.7K 5% 1/4W	
R498	1-249-425-11	CARBON 4.7K 5% 1/4W	(G, IT)
R499	1-249-425-11	CARBON 4.7K 5% 1/4W	(G, IT)
R500	1-249-425-11	CARBON 4.7K 5% 1/4W	(G, IT)
R501	1-249-425-11	CARBON 4.7K 5% 1/4W	(G, IT)

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description	Remark
RV401	1-241-785-11	RES, ADJ, CARBON 10K(REC LEVEL L)	
RV451	1-241-785-11	RES, ADJ, CARBON 10K(REC LEVEL R)	

< CRYSTAL >

Ref. No.	Part No.	Description	Remark
X301	1-577-358-21	VIBRATOR, CERAMIC(4MHz)	

****

Ref. No.	Part No.	Description	Remark
*	1-651-088-11	TC-SW BOARD	

****

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN3051	1-580-482-11	SOCKET, CONNECTOR 7P	

< DIODE >

Ref. No.	Part No.	Description	Remark
D3051	8-719-026-66	LED SML1460E(FWD)	
D3052	8-719-026-66	LED SML1460E(REV)	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R3051	1-249-418-11	CARBON 1.2K 5% 1/4W	
R3052	1-249-421-11	CARBON 2.2K 5% 1/4W	
R3054	1-249-421-11	CARBON 2.2K 5% 1/4W	
R3055	1-249-424-11	CARBON 3.9K 5% 1/4W	
R3056	1-249-430-11	CARBON 12K 5% 1/4W	
R3061	1-249-411-11	CARBON 330 5% 1/4W	
R3063	1-249-410-11	CARBON 270 5% 1/4W	

< SWITCH >

Ref. No.	Part No.	Description	Remark
S3051	1-572-184-11	SWITCH, KEY BOARD(STOP)	
S3052	1-572-184-11	SWITCH, KEY BOARD(REW)	
S3053	1-572-184-11	SWITCH, KEY BOARD(FF)	
S3054	1-572-184-11	SWITCH, KEY BOARD(FWD)	
S3055	1-572-184-11	SWITCH, KEY BOARD(REW)	

****

MISCELLANEOUS

****

Ref. No.	Part No.	Description	Remark
4	1-751-965-21	WIRE (FLAT TYPE) (7 CORE)	
ANT1	1-501-321-51	ANTENNA, TELESCOPIC(H650)	
⚠15	1-569-007-11	ADAPTER, CONVERSION 2P(H650:E)	
⚠15	1-569-008-11	ADAPTER, CONVERSION 2P(H650:EA, MY, SP)	
⚠16	1-575-651-11	CORD, POWER(AEP, EA, MY, SP, EE)	
⚠16	1-575-653-11	CORD, POWER(E, MX)	
⚠16	1-590-042-11	CORD, POWER (WITH CORE)(G, IT)	
⚠16	1-690-609-11	CORD, POWER(Canadian)	
⚠16	1-696-570-21	CORD, POWER(UK)	
⚠16	1-696-848-21	CORD, POWER(AUS)	
17	1-751-960-21	WIRE (FLAT TYPE) (19 CORE)	
18	1-765-142-21	WIRE (FLAT TYPE) (17 CORE)	
19	1-751-962-11	WIRE (FLAT TYPE) (11 CORE)	
22	1-501-594-21	ANTENNA (FM)(G)	
55	1-751-964-11	WIRE (FLAT TYPE) (7 CORE)	
62	1-590-241-11	WIRE, FLAT TYPE (7 CORE)	
65	1-751-961-21	WIRE (FLAT TYPE) (9 CORE)	
67	1-751-963-11	WIRE (FLAT TYPE) (18 CORE)	
68	1-751-964-11	WIRE (FLAT TYPE) (7 CORE)	
167	1-638-983-11	PC BOARD, MOTOR FLEXIBLE	
252	1-452-719-11	MAGNET ASSY	
262	1-751-806-11	WIRE (FLAT TYPE) (5 CORE)	
304	8-848-144-11	DEVICE, OPTICAL KSS-240A	
305	1-575-001-11	WIRE, FLAT TYPE (12 CORE)	
HP101	A-2003-757-A	BASE ASSY, HEAD(PLAYBACK)	
HRP101	A-2003-930-A	BASE ASSY, HEAD(PLAYBACK/RECORD)	
M101A	X-3363-501-1	MOTOR ASSY(REEL)(DECK A)	
M101B	X-3363-501-1	MOTOR ASSY(REEL)(DECK B)	
M102A	X-3365-377-1	MOTOR ASSY(CAPSTAN)(DECK A)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
M102B	X-3365-377-1	MOTOR ASSY(CAPSTAN)(DECK B)	
M901	X-4917-504-1	MOTOR ASSY(SLED)	
M902	X-4917-523-1	MOTOR ASSY(SPINDLE)	
M903	A-4604-363-A	MOTOR (L) ASSY	

****

ACCESSORIES & PACKING MATERIALS
****

	1-467-461-11	COMMANDER, STANDARD (RM-S755)	
	2-181-754-21	COVER, BATTERY (FOR RM-S755)	
*	4-965-152-01	CUSHION (FRONT)	
*	4-965-153-01	CUSHION (REAR)	

****

****
HARDWARE LIST
****

#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S
#2	7-682-547-09	SCREW +BVTT 3X6 (S)
#3	7-682-548-04	SCREW +BVTT 3X8 (S)
#4	7-685-649-79	SCREW +BVTP 3X14 TYPE2 IT-3
#5	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S
#6	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S(H650)
#7	7-682-550-09	SCREW +BVTT 3X12 (S)
#8	7-621-770-67	SCREW +PTT 2.6X6 (S)
#9	7-627-556-08	SCREW +P 2.6X2.8
#10	7-621-775-00	SCREW +B 2.6X3
#11	7-621-255-15	SCREW +P 2X3

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Sony Corporation
Audio Group

English
94A0280-1
Printed in Japan
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Published by Audio Sector Quality Assurance Dept.

HCD-H650/H650M

SONY®
SERVICE MANUAL

AEP Model
E Model
Australian Model
HCD-H650

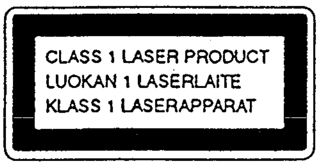
Canadian Model
AEP Model
UK Model
HCD-H650M

SUPPLEMENT-1

File this Supplement with the Service Manual.

Subject :
1. MECHANICAL ADJUSTMENTS
2. EXPLANATION OF IC TERMINALS
3. IC BLOCK DIAGRAM
4. BLOCK DIAGRAM
5. CORRECTION

This appliance is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT MARKING is located on the rear exterior.

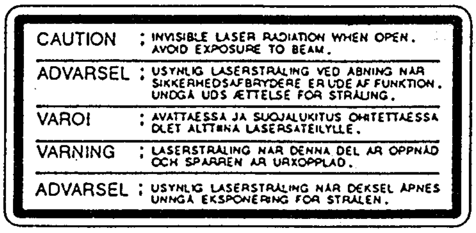


CLASS 1 LASER PRODUCT
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Laser component in this product is capable of emitting radiation exceeding the limit for Class 1.

The following caution label is located inside the unit.



CAUTION : INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM.
ADVARSEL : USYNLIG LASERSTRALING VED ABNING NAR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGA UDSÆTTELSE FOR STRALING.
VAROI : AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA LASERSATEILYLLE.
VARNING : LASERSTRALING NAR DENNA DEL AR OPPNAD OCH SPARREN AR URKOPPLAD.
ADVARSEL : USYNLIG LASERSTRALING NAR DEKSEL APNES UNNGA EKSPONERING FOR STRALEN.

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Sony Corporation
Consumer A&V Products Company
Home A&V Products Div.

9-959-291-81

English
94G0283-1
Printed in Japan

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Published by Home A&V Products Div.
Quality Engineering Dept.

SPECIFICATIONS

CD player section

System Compact disc digital audio system
Laser Semiconductor laser
Wavelength 780 – 790 nm

Tuner section

FM stereo, FM/AM superheterodyne tuner

FM tuner section

Tuning range 87.5 -108.0 MHz (50 kHz step for except Canadian, East European model) (100kHz step for Canadian model)
FM1 : 65 - 74MHz
FM2 : 87.5 - 108MHz
(East European model)
Aerial FM lead antenna (HCD-650M)
FM telescopic aerial (HCD-650)
Aerial terminals
75 ohm unbalanced
Intermediate frequency
10.7 MHz

AM tuner section

AEP, UK, East European, German model :
Tuning range
MW: 531 - 1,602 kHz
LW: 153 - 279 kHz
Canadian model : AM: 530 -1,710 kHz
(10 kHz Step)
531 - 1,710 kHz
(9kHz Step)
Italian model : MW : 522 - 1611kHz (9kHz step)
LW : 153 - 279kHz
Australian, Mexican, E, Saudi Arabia, Malaysia, Singapore model :
MW: 531 - 1,602 kHz
(9 kHz step)
530 - 1710 kHz
(10 kHz step)
SW: 5.95 - 17,9MHz
Aerial AM loop aerial
External aerial terminals
Intermediate frequency
450 kHz

Cassette deck section

Recording system
4-track 2-channel stereo
Frequency response
(DOLBY NR OFF)
60 – 13,000 Hz (±3 dB), using TYPE I cassette (Sony HF-S)
60 – 14,000 Hz (±3 dB), using TYPE II cassette(Sony UX-S)
Wow and flutter
0.1% WRMS +0.3% (DIN)

Amplifier section

For UK, AEP model :
Continuous RMS power output:
35+35 watts (6 ohms at 1 kHz, DIN)
40+40 watts (6 ohms at 1 kHz, 5% THD)
Music power output:
80+80 watts (6 ohms at 1 kHz)
For Canadian model :
Continuous RMS power output:
40+40 watts (6 ohms at 1 kHz, 5%)
For Singapore, E, Saudi Arabia, Malaysia, Australian, Mexican, model :
Coutionuous RMS Power output:
40+40 watts (6 ohms at 1 kHz, 5% THD)
Peak music power output:
500 watts (4 speakers driven)
Inputs
MIX MIC (mini jack):
for Canadian, Australian, E, Saudi Arabia, Mexican, Malaysia, Singapore model :
Sensitivity 1 mV, impedance 600 ohms
MD/AUX (phono jack):
for Canadian, Australian, E, Saudi Arabia, Mexican, Malaysia, Singapore model :
Sensitivity 450 mV, impedance 47 kilohms
MD/PHONO : (Phono Position)
For UK, AEP, G, IT, EE model :
Sensitivity 5 mV
MD/PHONO : (MD Position)
for AEP, UK, German, Italian, East European model :
Sensitivity 250mV, impedance 47 kilohms
Outputs
HEADPHONES (stereo mini jack):
accept headphones of 8 ohms or more.
SPEAKER: accept impedance of 6 to 16 ohms.
SURROUND SPEAKER:
for E, Australian, Saudi Arabia, Malaysia, Mexican model :
accept impedance of 8 to 16 ohms.
Singapore model :16 Ωs.

General

Destination	Power requirements	Power consumption
Canadian model	120V AC, 50Hz	120W
Australian model	220 – 240V AC, 50Hz	150W
AEP, German, Italian, East European model	220 – 230V AC, 50/60Hz	120W
UK model	240V AC, 50Hz	120W
E, Saudi Arabia, Mexican, Malaysia, Singapore model	110 – 120V/220V – 240V AC, 50/60Hz Adjustable with the Voltage Selector	150W

Dimensions Approx. 225 x 285 x 275 mm (w/h/d)
(8 7/8 x 11 1/4 x 10 7/8 inches)
incl. projecting parts and controls
Mass Approx. 6.5 kg (14 lb. 50 oz.)

Design and specifications are subject to change without notice.

Note
This appliance conforms with EEC Directive 87/308/EEC regarding interference suppression.

MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab :

record/playback head	pinch roller
erase head	rubber belts
capstan	idlers

2. Demagnetize the record/playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

- **Torque Measurement**

Torque	Torque Meter	Meter Reading
Forward	CQ-102C	35 to 60 g•cm (0.49 – 0.82 oz•inch)
Forward Back Tension	CQ-102C	2 to 6 g•cm (0.026 – 0.082 oz•inch)
Reverse	CQ-102RC	35 to 60 g•cm (0.49 – 0.82 oz•inch)
Reverse Back Tension	CQ-102RC	2 to 6 g•cm (0.026 – 0.082 oz•inch)
FF, REV	CQ-201B	70 to 110 g•cm (0.97 oz to 1.53 oz•inch)

EXPLANATION OF IC TERMINALS

IC201 DISPLAY CONTROLLER (μPD78043GF-060-3B9)

Pin No.	Pin name	I/O	Description
1	5G	O	FL display drive.
2	6G	O	
3	7G	O	
4	8G	O	
5	9G	O	
6	10G	O	
7	11G	O	
8	VDD	–	+5v.
9	VOL+	O	Volume motor control output. "H" : Volume up
10	VOL –	O	Volume motor control output. "H" : Volume down
11	DI • PLL	I	Serial data input from tuner PLL IC. (LC7218)
12	CE • PLL	O	Chip select output to tuner PLL IC. (LC7218)
13	DO • PLL	O	Serial data output to tuner PLL IC. (LC7218)
14	CLK • PLL	O	Serial clock output to tuner PLL IC. (LC7218)
15	DI • 7522	O	Serial data output equalizer controller. (IC731, NJU7305L)
16	CLK • 7522	O	Serial clock output equalizer controller. (IC731, NJU7305L)
17	RESET	I	Reset. "L" : Reset
18	B	O	Spectrum analyzer input switching output.
19	A	O	
20	AVss	–	GND
21	BACK • UP	I	Backup mode detection input. "L" : Backup mode
22	STEREO	I	Stereo discrimination from FM/AM IF amplifier (LA1831). "L" : Stereo
23	TUNED	I	Tuning discrimination from FM/AM IF amplifier (LA1831). "L" : Tuning
24	COM2	I	Spectrum analyzer input. (63Hz, 250Hz, 1kHz)
25	COM1	I	Spectrum analyzer input. (4kHz, 10kHz)
26	KEY. IN2	I	Key input.
27	KEY. IN1	I	
28	KEY. IN0	I	
29	AVDD	–	+5V power supply.
30	AV. REF	–	+5V power supply.
31	XT1	I	Subsystem clock (32.768kHz). Connected to crystal oscillator.
32	XT2	O	
33	Vss	–	GND
34	X1	I	System clock (4.19MHz). Connected to crystal oscillator.
35	X2	O	
36	DATA	I/O	Write/read data I/O with EEPROM (X24C01P)
37	CLK	O	Serial clock output to EEPROM (X24C01P)
38	CLK	O	Serial clock output to 16-bit serial/parallel converter. (M50255P)
39	DATA	O	Serial data output to 16-bit serial/parallel converter. (M50255P)
40	D3	I/O	Dispaly data 3 input and key data 3 output with CD controller. (μ PD75116GF)

Pin No.	Pin name	I/O	Description
41	D2	I/O	Display data 2 input and key data 2 output with CD controller. (μ PD75116GF)
42	D1	I/O	Display data 1 input and key data 1 output with CD controller.(μ PD75116GF)
43	D0	I/O	Display data 0 input and key data 0 output with CD controller. (μ PD75116GF)
44	DPCLK	I	Serial clock input from CD controller. (μ PD75116GF)
45	KEYREQ	O	Key data outpu request to CD controller.. (μ PD75116GF)
46	AUBOUT	O	Audio bus output.
47	AUBIN	I	Audio bus input.
48	Vss	–	GND
49	SIRCS	O	Infrared remote commander signal input.
50	LOW	O	DBS LOW LED output.
51	HIGH	O	DBS HIGH LED output.
52	VDD	–	+5V power supply.
53	P23	O	FL display drive.
54	P22	O	
55	P21	O	
56	P20	O	
57	P19	O	
58	P18	O	
59	P17	O	
60	P16	O	
61	P15	O	
62	P14	O	
63	P13	O	
64	P12	O	
65	P11	O	
66	P10	O	
67	P9	O	
68	P8	O	
69	P7	O	
70	P6	O	
71	VLOAD	–	– 24V power supply for dirving FL display.
72	P5	O	FL display drive.
73	P4	O	
74	P3	O	
75	P2	O	
76	P1	O	
77	1G	O	
78	2G	O	
79	3G	O	
80	4G	O	

IC301 DECK CONTROLLER (M50964-260FP)

<table>
<tr><th>Pin No.</th><th>Pin name</th><th>I/O</th><th>Description</th></tr>
<tr><td>1</td><td>G</td><td></td><td>GND</td></tr>
<tr><td>2</td><td>G</td><td></td><td>GND</td></tr>
<tr><td>3</td><td>G</td><td></td><td>GND</td></tr>
<tr><td>4</td><td></td><td></td><td>Connected +5V.</td></tr>
<tr><td>5</td><td>G</td><td></td><td>GND</td></tr>
<tr><td>6</td><td>B HALF</td><td>I</td><td>Deck B record prevention claw A, B detection input. (Analog)
<table>
<tr><td>Voltage (V)</td><td>1V</td><td>1.9V</td><td>2.8V</td><td>3.9V</td><td>5V</td></tr>
<tr><td>Half</td><td>ON</td><td>ON</td><td>ON</td><td>ON</td><td>OFF</td></tr>
<tr><td>E. PROOF A</td><td>OFF</td><td>ON</td><td>OFF</td><td>ON</td><td>OFF</td></tr>
<tr><td>E. PROOF B</td><td>ON</td><td>ON</td><td>OFF</td><td>OFF</td><td>OFF</td></tr>
</table></td></tr>
<tr><td>7</td><td>KEY Y</td><td>I</td><td rowspan="2">KEY input.
<table>
<tr><td>Voltage (V)</td><td>0</td><td>0.3</td><td>0.7</td><td>1.2</td><td>1.7</td><td>2.3</td><td>2.8</td><td>3.4</td><td>4.0</td><td>4.5</td><td>5.0</td></tr>
<tr><td>KEY Y</td><td></td><td></td><td></td><td></td><td></td><td>A ◀◀</td><td>A ▶▶</td><td></td><td></td><td>RELAY</td><td>OFF</td></tr>
<tr><td>KEY X</td><td>A ■</td><td>A ▶</td><td>A ◀</td><td></td><td></td><td></td><td>HIGH SPEED DUBBING</td><td></td><td>CD</td><td></td><td></td></tr>
</table></td></tr>
<tr><td>8</td><td>KEY X</td><td>I</td></tr>
<tr><td>9</td><td>AMS IN</td><td>I</td><td>AMS signal input.</td></tr>
<tr><td>10</td><td>LM $\overline{\text{ON}}$/OFF</td><td>O</td><td>Line mute output.</td></tr>
<tr><td>11</td><td>RM $\overline{\text{ON}}$/OFF</td><td>O</td><td>Mute output.</td></tr>
<tr><td>12</td><td>RELAY $\overline{\text{ON}}$/OFF</td><td>O</td><td>Control output to REC/PB select switch. (IC31)</td></tr>
<tr><td>13</td><td>$\overline{\text{REC}}$/PB</td><td>O</td><td>Dolby IC REC/PB select output.</td></tr>
<tr><td>14</td><td>EQ70</td><td>O</td><td>Playback EQ output for playing deck. (Not used) (Open)</td></tr>
<tr><td>15</td><td>SEL A/$\overline{\text{B}}$</td><td>O</td><td>Dolby IC PB input Deck A/B select output.</td></tr>
<tr><td>16</td><td>AMS A/$\overline{\text{B}}$</td><td>O</td><td>AMS AMP input Deck A/B select output. (Not used) (Open)</td></tr>
<tr><td>17</td><td>AU BUS</td><td>I</td><td>AUDIO BUS input.</td></tr>
<tr><td>18</td><td>$\overline{\text{BIAS}}$ ON/$\overline{\text{OFF}}$</td><td>O</td><td>Bias oscillation output.</td></tr>
<tr><td>19</td><td>AUB OUT</td><td>O</td><td>AUDIO BUS output.</td></tr>
<tr><td>20</td><td>A BUS</td><td>I</td><td>AUDIO BUS normal input.</td></tr>
<tr><td>21</td><td>NC</td><td>–</td><td>Not used.</td></tr>
<tr><td>22</td><td>NC</td><td>–</td><td>Not used.</td></tr>
<tr><td>23</td><td>NC</td><td>–</td><td>Not used.</td></tr>
<tr><td>24</td><td>Vss</td><td></td><td>GND</td></tr>
<tr><td>25</td><td>$\overline{\text{RESET}}$</td><td>I</td><td>Microcomputer reset input.</td></tr>
<tr><td>26</td><td>XIN</td><td>I</td><td>Clock input. (4MHz)</td></tr>
<tr><td>27</td><td>XOUT</td><td>O</td><td>Clock output. (4MHz)</td></tr>
<tr><td>28</td><td>ϕ</td><td>O</td><td>Not used. (Open)</td></tr>
<tr><td>29</td><td>Vss</td><td></td><td>GND</td></tr>
<tr><td>30</td><td>PW IN</td><td>I</td><td>POWER OFF detection input.</td></tr>
<tr><td>31</td><td>A STOP</td><td>I</td><td>Deck A STOP switch input.</td></tr>
<tr><td>32</td><td>A HLAF</td><td>I</td><td>Deck A Half switch input.</td></tr>
<tr><td>33</td><td>A SHUT</td><td>I</td><td>Deck A Reel table signal input.</td></tr>
<tr><td>34</td><td>A70U</td><td>I</td><td>Deck A TYPE switch input. (Not used) (Open)</td></tr>
<tr><td>35</td><td>B STOP</td><td>I</td><td>Deck B STOP switch input.</td></tr>
</table>

Pin No.	Pin name	I/O	Description
36	B SHUT	I	Deck B Reel table signal input.
37	B70U	I	Deck B TYPE switch input. (Not used) (Open)
38	NC	–	Not used.
39	ARM 3	O	Deck A Reel Motor control out.
40	ARM 2	O	Deck A Reel Motor control out.
41	ARM 1	O	Deck A Reel Motor control out.
42	BRM 3	O	Deck B Reel Motor control out.
43	BRM 2	O	Deck B Reel Motor control out.
44	BRM 1	O	Deck B Reel Motor control out.
45	H/L	O	Capstan motor speed select.
46	A CM	O	A Capstan motor ON/OFF.
47	B CM	O	B Capstan motor ON/OFF.
48	BS/ASCH	I	Deck A Reel table/BS signal input.
49	A•P/BSCH	I	Deck B Reel table/A•P signal input.
50	A•REV	O	Deck A RVS LED output.
51	A•FWD	O	Deck A FWD LED output.
52	A PLAY	O	Deck B RVS/FWD LED control output. (Not used) (Open)
53	DUB H	O	High Speed Dubbing LED output.
54	DUB N	O	Normal Speed Dubbing LED output. (Not used) (Open)
55	NC	–	Not used.
56	CD SYNC	O	Auto CD Synchro LED output.
57	B•REV	O	Deck B RVS LED output.
58	B•FWD	O	Deck B FWD LED output.
59	B PLAY	O	Deck B RVS/FWD LED control output. (Not used) (Open)
60	B PAUSE	O	Deck B PAUSE LED output.
61	B•REC	O	Deck B REC LED output.
62	PASS	O	PASS amplifier switch output to Dolby IC. (IC401)
63	TEST	I	Electrical adjustment test mode setting.
64	NC	–	Not used.
65	Vss		GND
66	NC	–	Not used.
67	Vss		POWER 5 ± 0.5V.
68	AVss		Analog system GND.
69	VREF	I	Analog system reference voltage input.
70	DAC		GND
71	——		GND
72	——		GND

[TEST MODE]

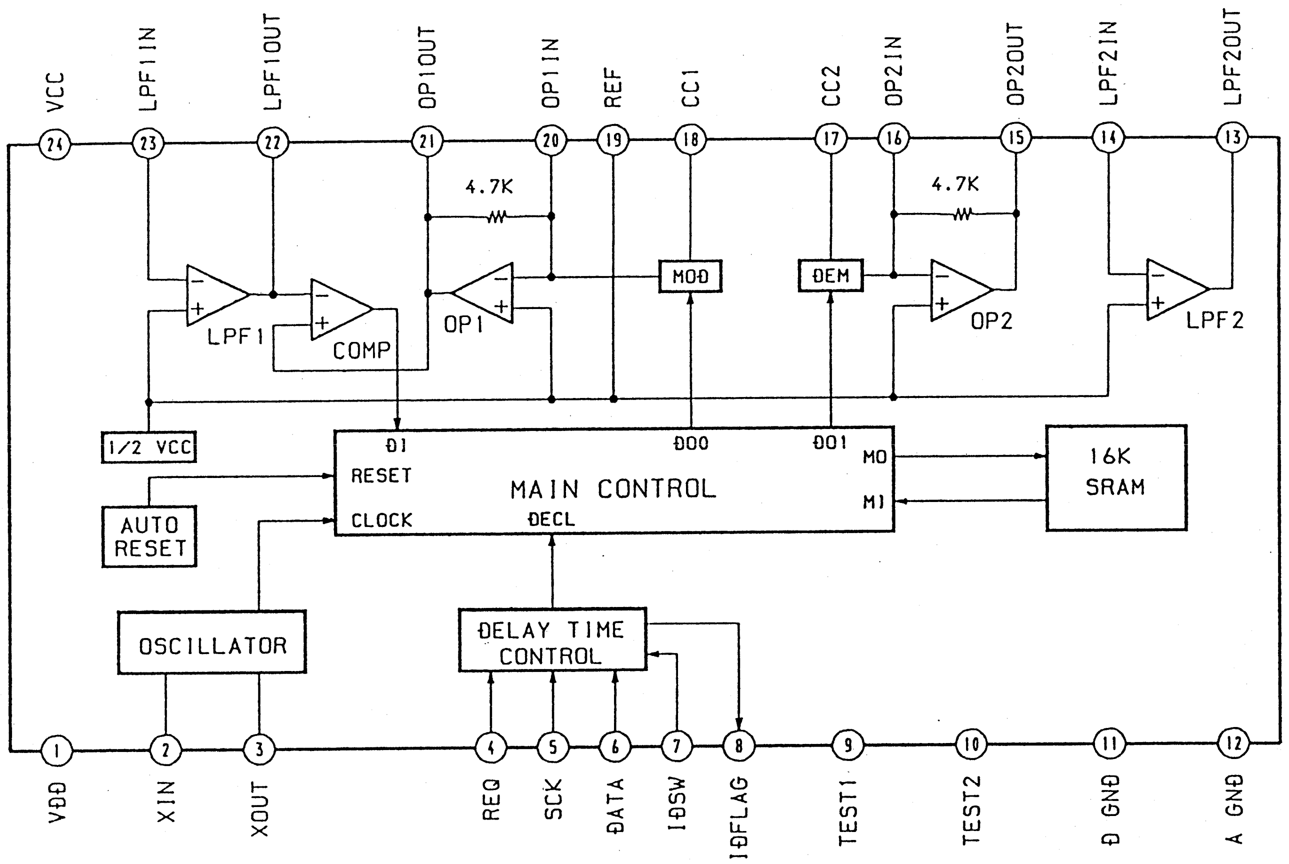
When making pin (63) low (connect TP1 to ground with jumper wire), following function operates.

Source monitor

release the line mute while recording

● IC BLOCK DIAGRAM

IC103 M65830AP (Service Manual See page 26)


VCC
LPF1IN
LPF1OUT
OP1OUT
OP1IN
REF
CC1
CC2
OP2IN
OP2OUT
LPF2IN
LPF2OUT
24
23
22
21
20
19
18
17
16
15
14
13
4.7K
4.7K
MOD
DEM
LPF1
COMP
OP1
OP2
LPF2
1/2 VCC
D1
D00
D01
RESET
MAIN CONTROL
CLOCK
DECL
MO
M1
16K SRAM
AUTO RESET
OSCILLATOR
DELAY TIME CONTROL
1
2
3
4
5
6
7
8
9
10
11
12
VDD
XIN
XOUT
REQ
SCK
DATA
IDSW
IDFLAG
TEST1
TEST2
D GND
A GND

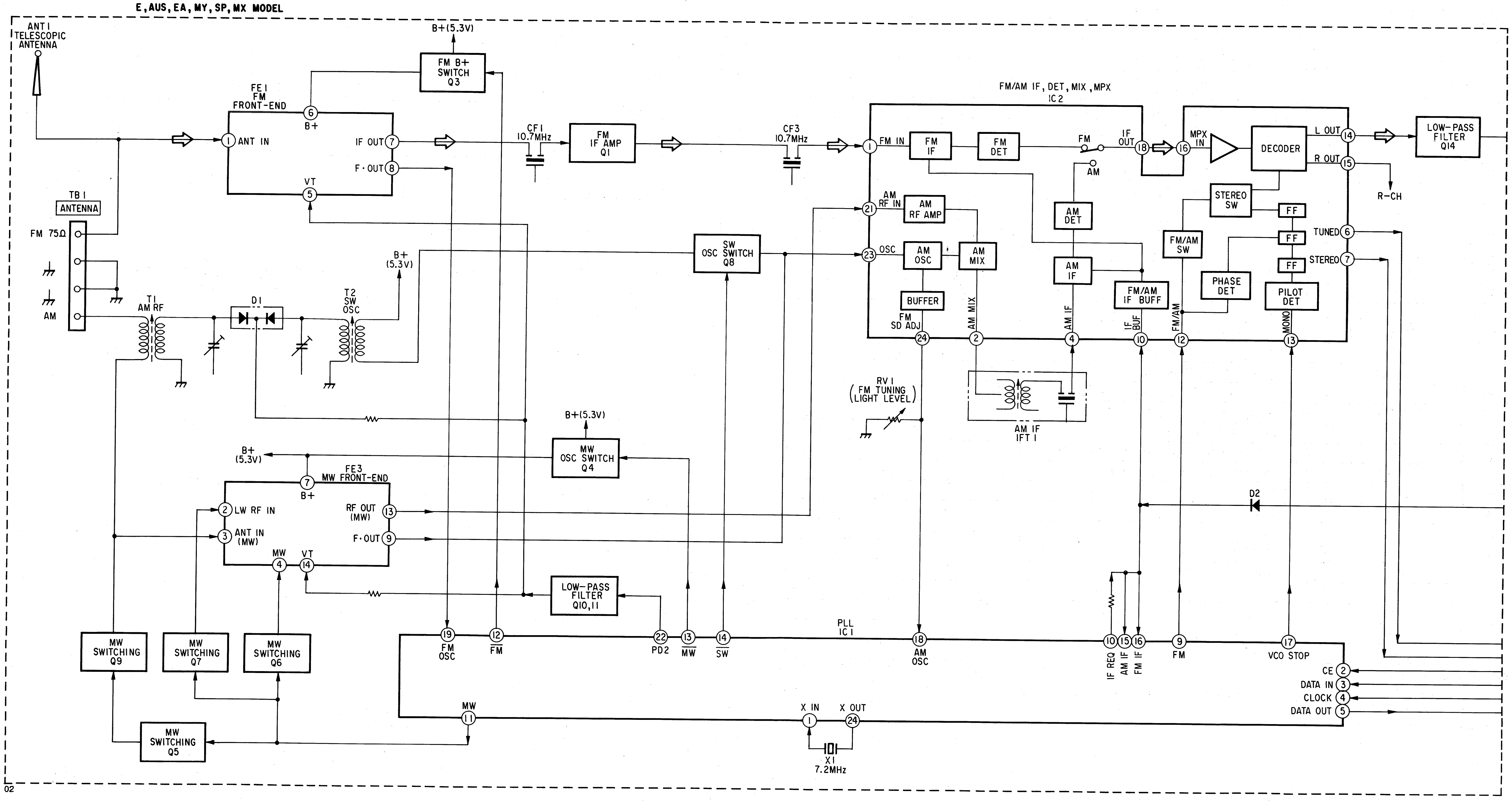
BLOCK DIAGRAMS (1)

- Abbreviations

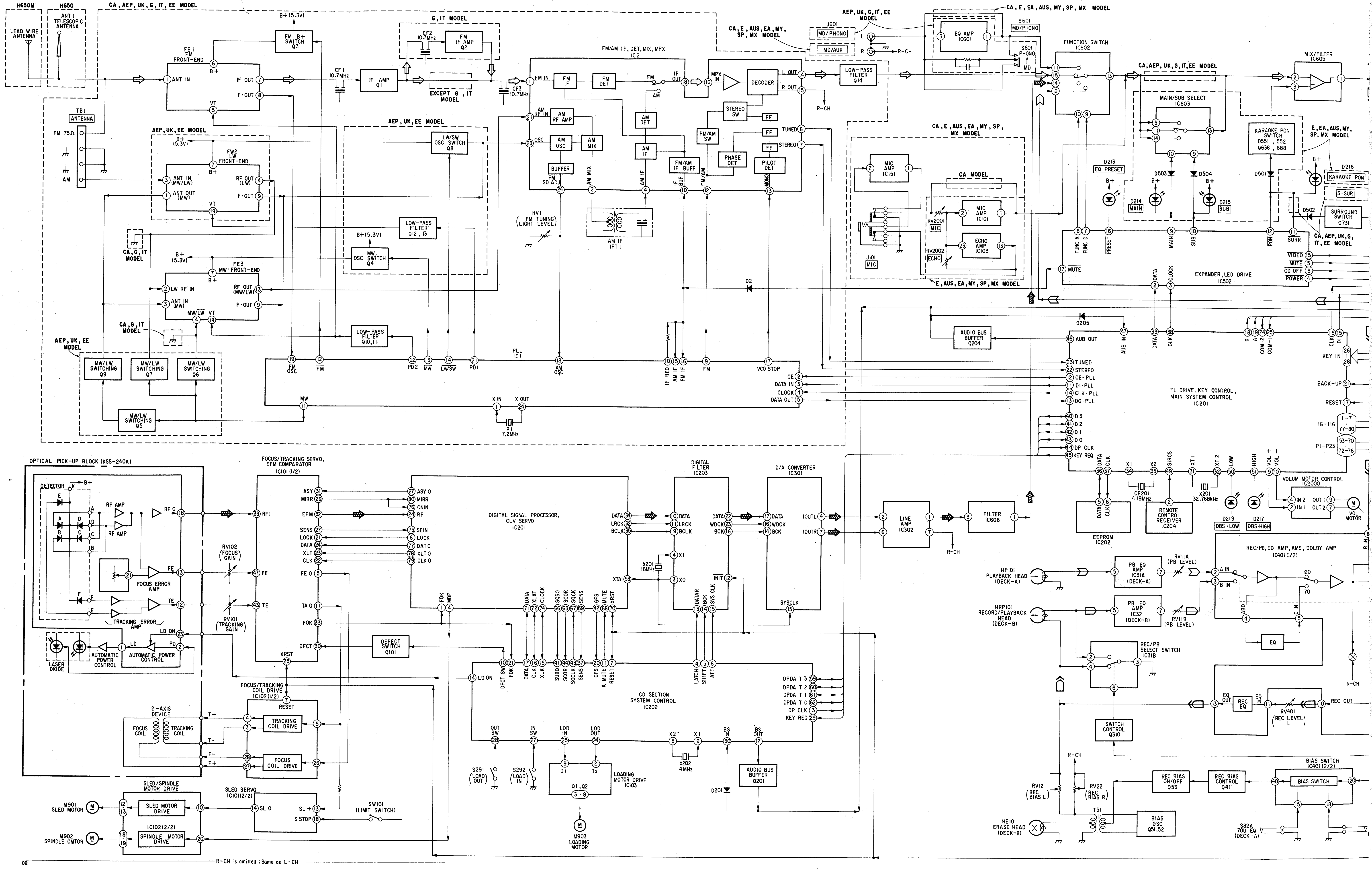
CA : Canadian
AUS : Australian
G : German
IT : Italian
MX : Mexican
EA : Saudi Arabia
EE : East European
MY : Malaysia
SP : Singapore

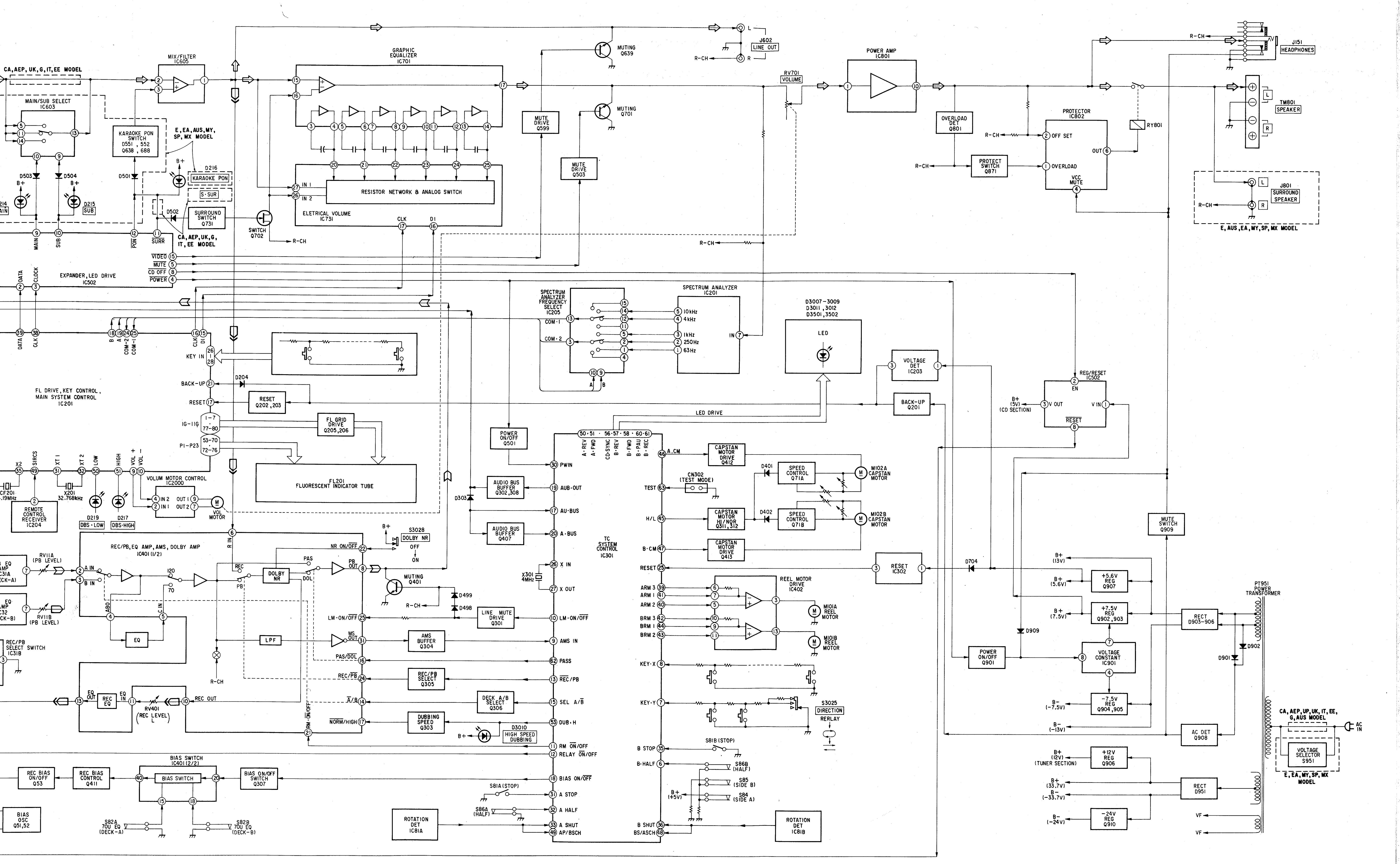
- Signal path.

⇨ : FM
⇨ : PB (DECK-A)
⇨ : PB (DECK-B)
⇨ : REC (DECK-B)
⇨ : CD


E, AUS, EA, MY, SP, MX MODEL
ANT I TELESCOPIC ANTENNA
B+(5.3V)
FM B+ SWITCH Q3
FE I FM FRONT-END
B+
ANT IN
IF OUT
F·OUT
VT
TB I ANTENNA
FM 75Ω
AM
T I AM RF
D I
T2 SW OSC
B+ (5.3V)
CF I 10.7MHz
FM IF AMP Q1
CF3 10.7MHz
SW OSC SWITCH Q8
FM/AM IF, DET, MIX, MPX IC2
FM IN
FM IF
FM DET
FM
AM
IF OUT
MPX IN
DECODER
L OUT
R OUT
LOW-PASS FILTER Q14
R-CH
AM RF IN
AM RF AMP
OSC
AM OSC
AM MIX
AM DET
AM IF
STEREO SW
FF
FM/AM SW
FM/AM IF BUFF
PHASE DET
PILOT DET
TUNED
STEREO
BUFFER
FM SD ADJ
AM MIX
AM IF
IF BUF
FM/AM
MONO
RV I (FM TUNING LIGHT LEVEL)
AM IF IFT I
B+(5.3V)
MW OSC SWITCH Q4
B+ (5.3V)
FE3 MW FRONT-END
LW RF IN
ANT IN (MW)
RF OUT (MW)
F·OUT
MW
VT
D2
LOW-PASS FILTER Q10, 11
PLL IC I
FM OSC
FM
PD2
MW
SW
AM OSC
IF REQ
AM IF
FM IF
FM
VCO STOP
CE
DATA IN
CLOCK
DATA OUT
MW SWITCHING Q9
MW SWITCHING Q7
MW SWITCHING Q6
MW SWITCHING Q5
MW
X IN
X OUT
X I 7.2MHz
02

BLOCK DIAGRAMS (2)

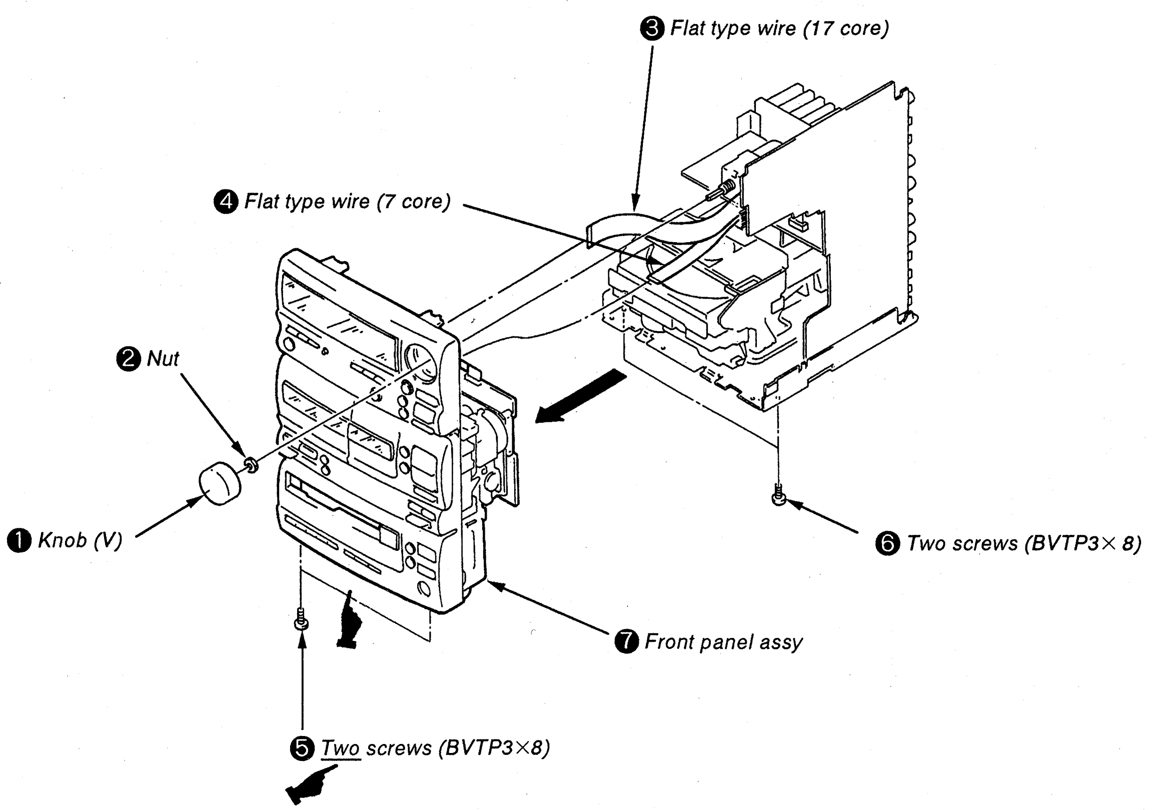

H650M
LEAD WIRE ANTENNA
H650
ANT1 TELESCOPIC ANTENNA
CA, AEP, UK, G, IT, EE MODEL
TB1
ANTENNA
FM 75Ω
AM
FE1 FM FRONT-END
ANT IN
IF OUT
F-OUT
VT
B+
B+(5.3V)
FM B+ SWITCH Q3
CF1 10.7MHz
IF AMP Q1
G, IT MODEL
CF2 10.7MHz
FM IF AMP Q2
EXCEPT G, IT MODEL
CF3 10.7MHz
FM/AM IF, DET, MIX, MPX IC2
FM IN
FM IF
FM DET
AM RF IN
AM RF AMP
OSC
AM OSC
AM MIX
AM DET
AM IF
BUFFER
FM SD ADJ
AM MIX
AM IF
IF BUF
FM/AM
MONO
MPX IN
DECODER
L OUT
R OUT
STEREO SW
FF
FM/AM SW
FM/AM IF BUFF
PHASE DET
PILOT DET
TUNED
STEREO
AM IF IFT1
RV1 (FM TUNING (LIGHT LEVEL)
R-CH
AEP, UK, G, IT, EE MODEL
CA, E, AUS, EA, MY, SP, MX MODEL
J601
MD/PHONO
MD/AUX
LOW-PASS FILTER Q14
AEP, UK, EE MODEL
LW/SW OSC SWITCH Q8
FW2 LW FRONT-END
ANT IN (MW/LW)
ANT OUT (MW)
RF OUT (LW)
F-OUT
LOW-PASS FILTER Q12, 13
MW OSC SWITCH Q4
CA, G, IT MODEL
FE3 MW FRONT-END
LW RF IN
ANT IN (MW)
MW/LW
RF OUT (MW/LW)
LOW-PASS FILTER Q10, 11
AEP, UK, EE MODEL
MW/LW SWITCHING Q9
MW/LW SWITCHING Q7
MW/LW SWITCHING Q6
MW/LW SWITCHING Q5
PLL IC1
FM OSC
FM
PD2
MW
LW/SW
PD1
AM OSC
IF REQ
AM IF
FM IF
VCO STOP
CE
DATA IN
CLOCK
DATA OUT
X IN
X OUT
X1 7.2MHz
D2
CA, E, EA, AUS, MY, SP, MX MODEL
S601 MD/PHONO
EQ AMP IC601
S601 PHONO MD
FUNCTION SWITCH IC602
CA, AEP, UK, G, IT, EE MODEL
MIX/FILTER IC605
MAIN/SUB SELECT IC603
KARAOKE PON SWITCH D551, 552 Q638, 688
E, EA, AUS, MY, SP, MX MODEL
D216
KARAOKE PON
S-SUR
SURROUND SWITCH Q731
CA, AEP, UK, G, IT, EE MODEL
CA, E, AUS, EA, MY, SP, MX MODEL
MIC AMP IC151
CA MODEL
MIC AMP IC101
ECHO AMP IC103
RV2001 MIC
RV2002 ECHO
J101 MIC
E, AUS, EA, MY, SP, MX MODEL
D213 EQ PRESET
D214 MAIN
D503
D504
D215 SUB
D501
D502
FUNC A
FUNC D
PRESET
MAIN
SUB
PON
SURR
MUTE
VIDEO
MUTE
CD OFF
POWER
EXPANDER, LED DRIVE IC502
DATA
CLOCK
D205
AUDIO BUS BUFFER Q204
AUB OUT
AUB IN
CLK
COM-2
COM-1
DI
KEY IN
TUNED
STEREO
CE-PLL
DI-PLL
CLK-PLL
DO-PLL
FL DRIVE, KEY CONTROL, MAIN SYSTEM CONTROL IC201
BACK-UP
RESET
IG-11G
P1-P23
D3
D2
D1
D0
DP CLK
KEY REQ
X1
X2
SIRCS
XT1
XT2
LOW
HIGH
VOL+
VOL-
CF201 4.19MHz
X201 32.768kHz
EEPROM IC202
REMOTE CONTROL RECEIVER IC204
D219 DBS-LOW
D217 DBS-HIGH
VOLUM MOTOR CONTROL IC2000
IN2
IN1
OUT1
OUT2
VOL MOTOR
OPTICAL PICK-UP BLOCK (KSS-240A)
DETECTOR
RF AMP
RF O
FOCUS ERROR AMP
FE
TE
TRACKING ERROR AMP
LD ON
LD
PD
LASER DIODE
AUTOMATIC POWER CONTROL
RV102 (FOCUS GAIN)
RV101 (TRACKING GAIN)
FOCUS/TRACKING SERVO, EFM COMPARATOR IC101 (1/2)
RFI
ASY
MIRR
EFM
SENS
LOCK
DATA
XLT
CLK
FE O
TA O
FOK
DFCT
XRST
DEFECT SWITCH Q101
ASY O
MIRR
CNIN
RF
SEIN
LOCK
DATA O
XLT O
CLK O
DIGITAL SIGNAL PROCESSOR, CLV SERVO IC201
FOK
MDP
DATA
XLAT
CLOCK
SQSO
SCOR
SQCK
SENS
GFS
MUTE
XRST
XTAI
X201 16MHz
DIGITAL FILTER IC203
LRCK
BCLK
WDCK
BCK
INIT
DATAR
BCK
SYS CLK
D/A CONVERTER IC301
IOUTL
IOUTR
SYSCLK
LINE AMP IC302
FILTER IC606
FOCUS/TRACKING COIL DRIVE IC102 (1/2)
RESET
TRACKING COIL DRIVE
FOCUS COIL DRIVE
2-AXIS DEVICE
FOCUS COIL
TRACKING COIL
SLED/SPINDLE MOTOR DRIVE
SLED MOTOR DRIVE
IC102 (2/2)
SPINDLE MOTOR DRIVE
M901 SLED MOTOR
M902 SPINDLE OMTOR
SLED SERVO IC101 (2/2)
SL O
SL+
S STOP
SW101 (LIMIT SWITCH)
LD ON
DFCT SW
FOK
DATA
CLK
XLK
SUBQ
SCOR
SQCLK
SENS
GFS
A MUTE
RESET
LATCH
SHIFT
ATT
CD SECTION SYSTEM CONTROL IC202
DPDA T3
DPDA T2
DPDA T1
DPDA T0
DP CLK
KEY REQ
OUT SW
IN SW
LOD IN
LOD OUT
X2'
X1
BS IN
BS OUT
S291 (LOAD) (OUT)
S292 (LOAD) (IN)
Q1, Q2
LOADING MOTOR DRIVE IC103
M903 LOADING MOTOR
X202 4MHz
D201
AUDIO BUS BUFFER Q201
HP101 PLAYBACK HEAD (DECK-A)
HRP101 RECORD/PLAYBACK HEAD (DECK-B)
PB EQ AMP IC31A (DECK-A)
PB EQ AMP IC32 (DECK-B)
RV11A (PB LEVEL)
RV11B (PB LEVEL)
REC/PB, EQ AMP, AMS, DOLBY AMP IC401 (1/2)
A IN
B IN
ABO
C IN
EQ
120
70
REC/PB SELECT SWITCH IC31B
SWITCH CONTROL Q310
EQ OUT
REC EQ
EQ IN
RV401 (REC LEVEL) L
REC OUT
R-CH
RV12 (REC BIAS L)
RV22 (REC BIAS R)
T51
HE101 ERASE HEAD (DECK-B)
BIAS OSC Q51, 52
REC BIAS ON/OFF Q53
REC BIAS CONTROL Q411
BIAS SWITCH IC401 (2/2)
BIAS SWITCH
S82A 70U EQ (DECK-A)
R IN
R-CH is omitted : Same as L-CH
02


CA, AEP, UK, G, IT, EE MODEL
MIX/FILTER IC605
MAIN/SUB SELECT IC603
KARAOKE PON SWITCH D551, 552 Q638, 688
E, EA, AUS, MY, SP, MX MODEL
D216 KARAOKE PON
S·SUR
D503
D504
D501
D502
D215 SUB
SURROUND SWITCH Q731
CA, AEP, UK, G, IT, EE MODEL
SWITCH Q702
MAIN
SUB
PON
SURR
VIDEO
MUTE
CD OFF
POWER
EXPANDER, LED DRIVE IC502
DATA
CLOCK
GRAPHIC EQUALIZER IC701
IN 1
IN 2
RESISTOR NETWORK & ANALOG SWITCH
ELETRICAL VOLUME IC731
CLK
DI
R-CH
MUTE DRIVE Q599
MUTE DRIVE Q503
MUTING Q639
MUTING Q701
J602 LINE OUT
L
R
RV701 VOLUME
POWER AMP IC801
OVERLOAD DET Q801
PROTECT SWITCH Q871
PROTECTOR IC802
OFF SET
OVERLOAD
OUT
VCC MUTE
RY801
J151 HEADPHONES
TM801 SPEAKER
J801 SURROUND SPEAKER
E, AUS, EA, MY, SP, MX MODEL
SPECTRUM ANALYZER FREQUENCY SELECT IC205
COM-1
COM-2
SPECTRUM ANALYZER IC201
10kHz
4kHz
1kHz
250Hz
63Hz
IN
D3007-3009 D3011, 3012 D3501, 3502
LED
VOLTAGE DET IC203
REG/RESET IC502
EN
V OUT
V IN
RESET
B+ (5V) (CD SECTION)
BACK-UP Q201
DATA
CLK
COM-2
COM-1
KEY IN
BACK-UP
D204
RESET
RESET Q202, 203
IG-11G
P1-P23
FL GRID DRIVE Q205, 206
FL201 FLUORESCENT INDICATOR TUBE
FL DRIVE, KEY CONTROL, MAIN SYSTEM CONTROL IC201
LED DRIVE
POWER ON/OFF Q501
X2
SIRCS
XT1
XT2
LOW
HIGH
VOL+
VOL-
CF201 .19MHz
X201 32.768kHz
REMOTE CONTROL RECEIVER IC204
D219 DBS·LOW
D217 DBS·HIGH
VOLUM MOTOR CONTROL IC2000
IN 2
IN 1
OUT 1
OUT 2
VOL MOTOR
D303
AUDIO BUS BUFFER Q302, 308
AUDIO BUS BUFFER Q407
PWIN
AUB·OUT
AU·BUS
A·BUS
TC SYSTEM CONTROL IC301
X IN
X OUT
X301 4MHz
A·REV
A·FWD
CD·SYNC
B·REV
B·FWD
B·PAU
B·REC
A.CM
CAPSTAN MOTOR DRIVE Q412
CN302 (TEST MODE)
TEST
D401
D402
SPEED CONTROL Q71A
SPEED CONTROL Q71B
M102A CAPSTAN MOTOR
M102B CAPSTAN MOTOR
H/L
CAPSTAN MOTOR HI/NOR Q311, 312
B·CM
CAPSTAN MOTOR DRIVE Q413
RESET
RESET IC302
D704
ARM 3
ARM 1
ARM 2
BRM 3
BRM 1
BRM 2
REEL MOTOR DRIVE IC402
M101A REEL MOTOR
M101B REEL MOTOR
KEY·X
KEY·Y
S3025 DIRECTION
RERLAY
B STOP
S81B (STOP)
B·HALF
S86B (HALF)
S85 (SIDE B)
S84 (SIDE A)
B+ (+5V)
B SHUT
BS/ASCH
ROTATION DET IC81B
ROTATION DET IC81A
REC/PB, EQ AMP, AMS, DOLBY AMP IC401 (1/2)
RV11A (PB LEVEL)
RV11B (PB LEVEL)
EQ AMP IC31A (DECK-A)
EQ AMP IC32 (DECK-B)
REC/PB SELECT SWITCH IC31B
A IN
B IN
120
70
ABO
C IN
EQ
REC
PB
DOLBY NR
PAS
DOL
PB OUT
NR ON/OFF
B+
S3028 DOLBY NR
OFF
ON
MUTING Q401
D499
D498
LINE MUTE DRIVE Q301
LM·ON/OFF
LPF
MS OUT
AMS BUFFER Q304
AMS IN
PAS/DOL
PASS
REC/PB
REC/PB SELECT Q305
A/B
DECK A/B SELECT Q306
SEL A/B
NORM/HIGH
DUBBING SPEED Q303
DUB·H
D3010 HIGH SPEED DUBBING
RM·ON/OFF
RM ON/OFF
RELAY ON/OFF
R IN
R-CH
EQ OUT
REC EQ
EQ IN
RV401 (REC LEVEL) L
REC OUT
BIAS SWITCH IC401 (2/2)
BIAS SWITCH
BIAS ON/OFF SWITCH Q307
BIAS ON/OFF
REC BIAS ON/OFF Q53
REC BIAS CONTROL Q411
BIAS OSC Q51, 52
S82A 70U EQ (DECK-A)
S82B 70U EQ (DECK-B)
S81A (STOP)
A STOP
S86A (HALF)
A HALF
A SHUT
AP/BSCH
MUTE SWITCH Q909
B+ (13V)
B+ (5.6V)
+5.6V REG Q907
B+ (7.5V)
+7.5V REG Q902, 903
D909
POWER ON/OFF Q901
VOLTAGE CONSTANT IC901
B- (-7.5V)
-7.5V REG Q904, 905
B- (-13V)
RECT D903-906
D902
D901
AC DET Q908
PT951 POWER TRANSFORMER
CA, AEP, UP, UK, IT, EE, G, AUS MODEL
VOLTAGE SELECTOR S951
E, EA, MY, SP, MX MODEL
AC IN
B+ (12V) (TUNER SECTION)
+12V REG Q906
B+ (33.7V)
B- (-33.7V)
RECT D951
B- (-24V)
-24V REG Q910
VF

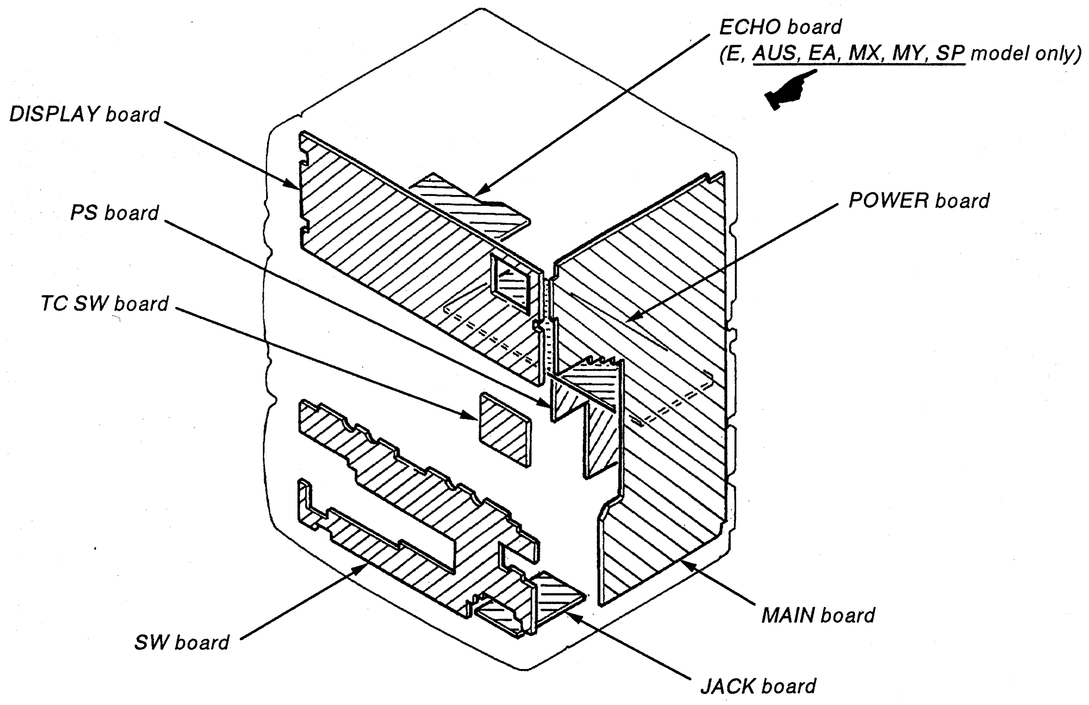
CORRECTION

☛ : corrected portion

2-3. FRONT PANEL REMOVAL (Service Manual See page 6)

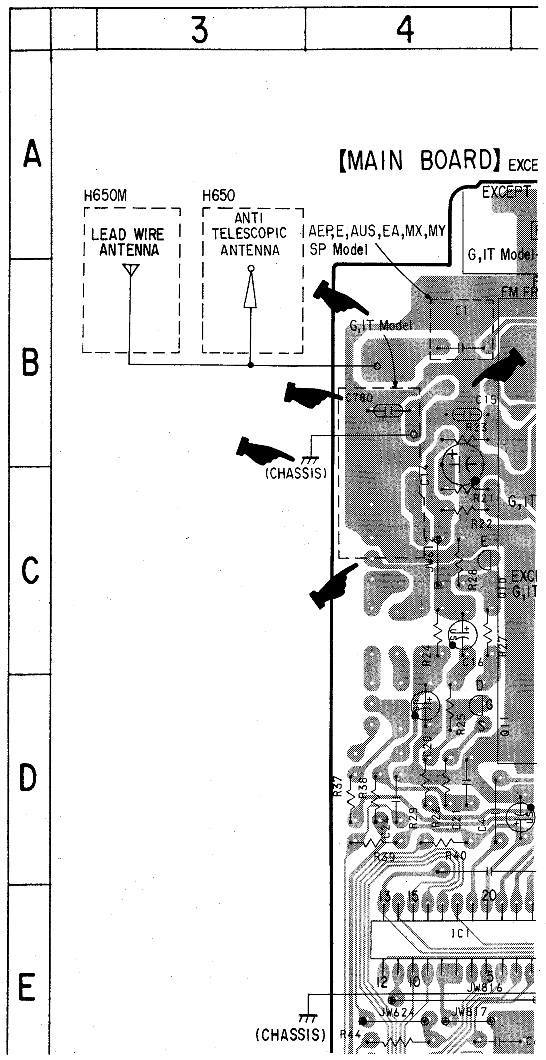

❸ Flat type wire (17 core)
❹ Flat type wire (7 core)
❷ Nut
❶ Knob (V)
❻ Two screws (BVTP3× 8)
❼ Front panel assy
❺ Two screws (BVTP3×8)

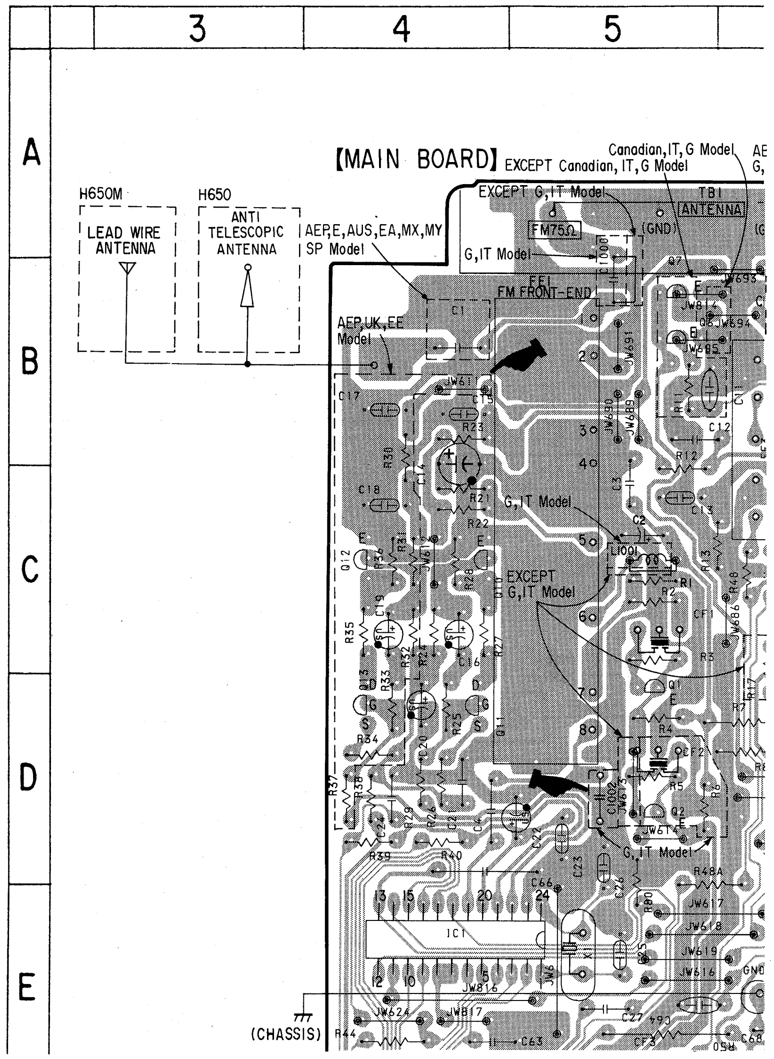
4-1. CIRCUIT BOARD LOCATION (Service Manual See page 15)


ECHO board
(E, AUS, EA, MX, MY, SP model only)
DISPLAY board
PS board
TC SW board
POWER board
SW board
MAIN board
JACK board

☛ : corrected portion

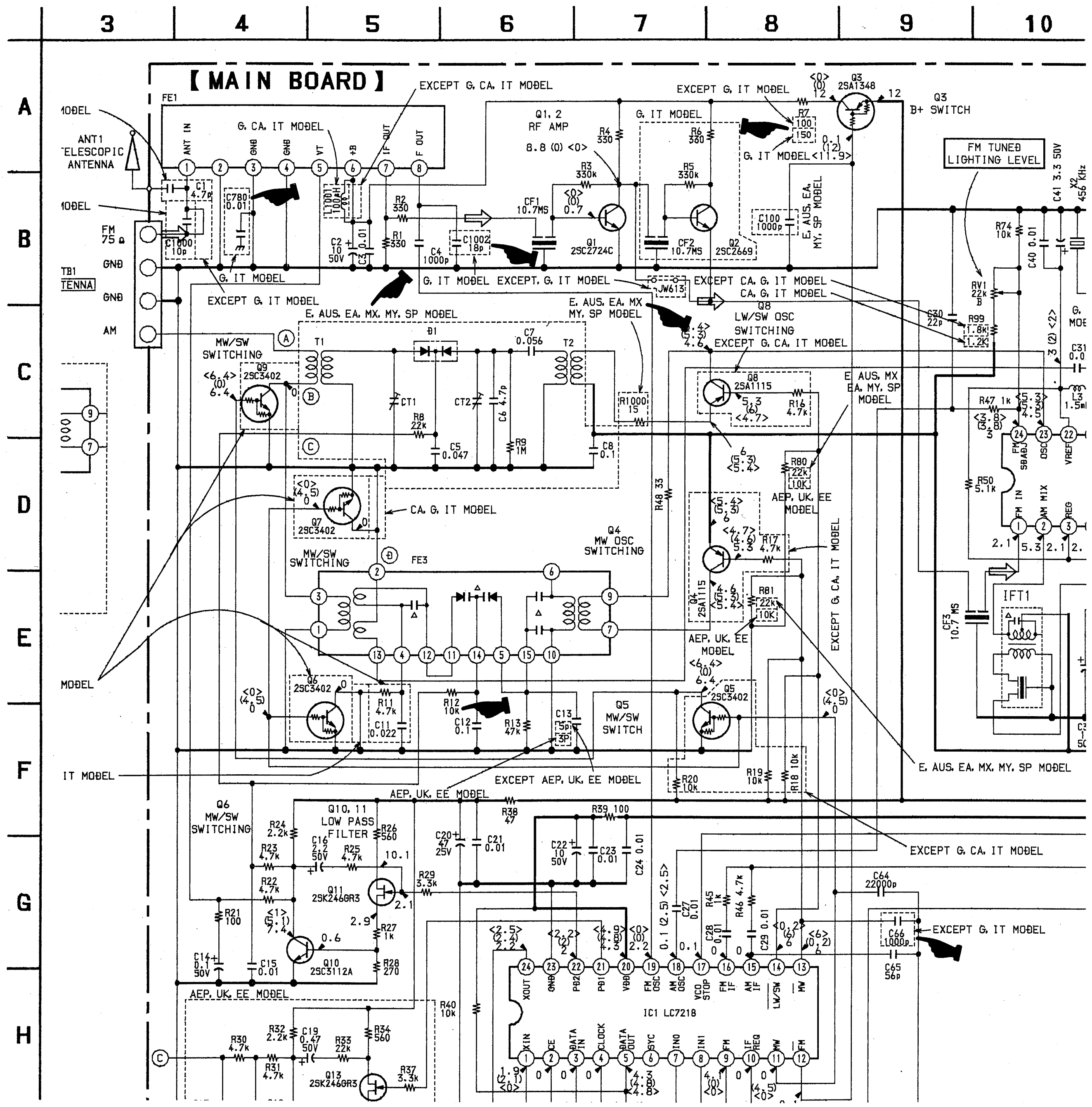
• PRINTED WIRING BOARDS – MAIN SECTION – (Service Manual See page 17)


3
4
A
B
C
D
E
[MAIN BOARD]
H650M
LEAD WIRE ANTENNA
H650
ANTI TELESCOPIC ANTENNA
AEP,E,AUS,EA,MX,MY SP Model
G,IT Model
FM FRONT-END
(CHASSIS)
IC1

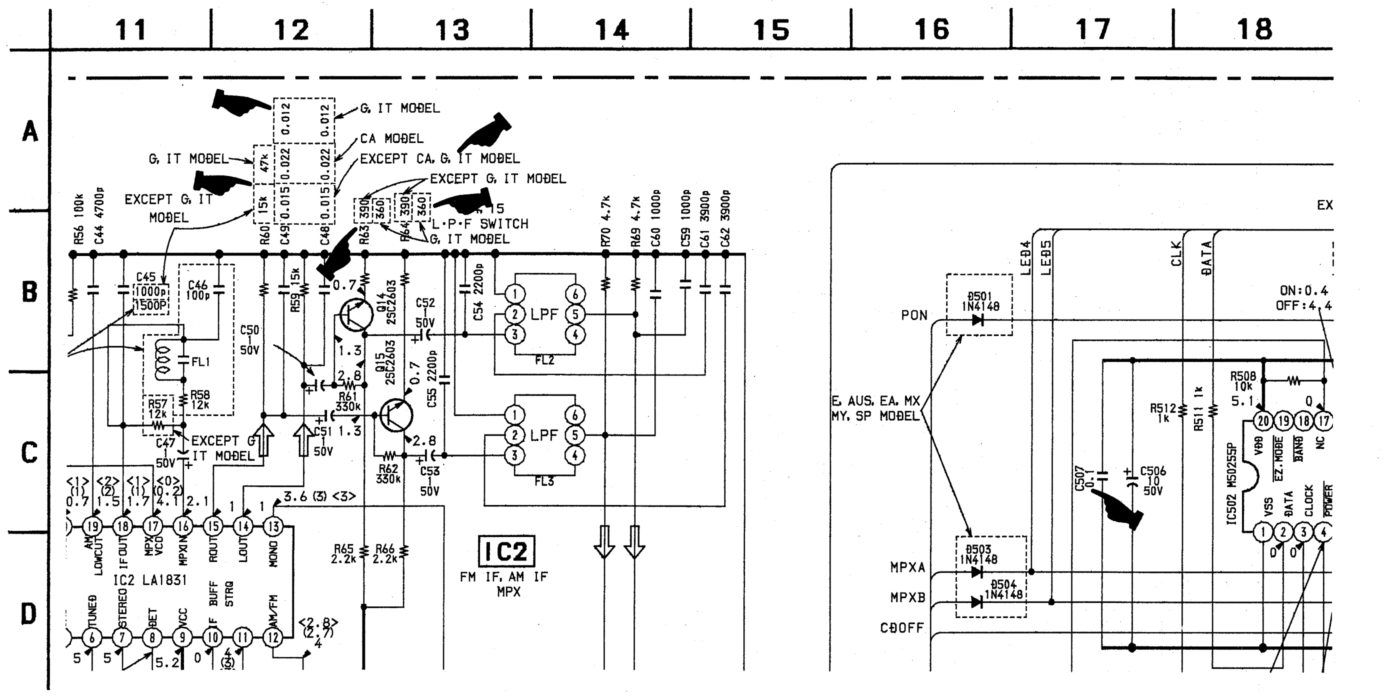

3
4
5
A
B
C
D
E
[MAIN BOARD] EXCEPT Canadian, IT, G Model
Canadian, IT, G Model
EXCEPT G, IT Model
H650M
LEAD WIRE ANTENNA
H650
ANTI TELESCOPIC ANTENNA
AEP,E,AUS,EA,MX,MY SP Model
G,IT Model
TB1 ANTENNA
FM75Ω
(GND)
FE1 FM FRONT-END
AEP,UK,EE Model
EXCEPT G,IT Model
G,IT Model
(CHASSIS)
IC1

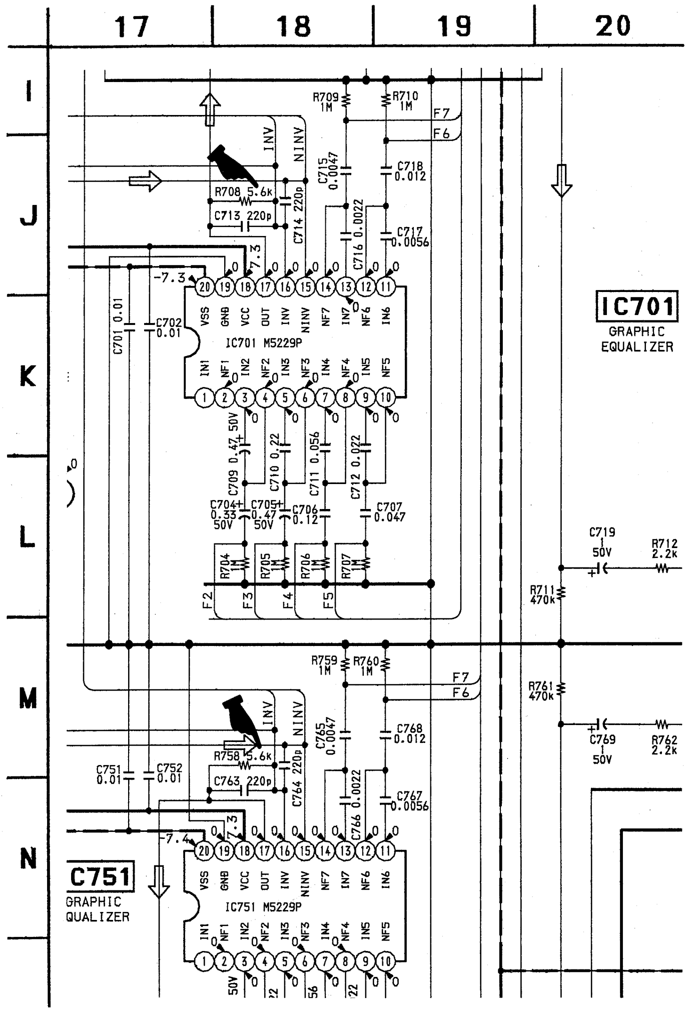
: corrected portion

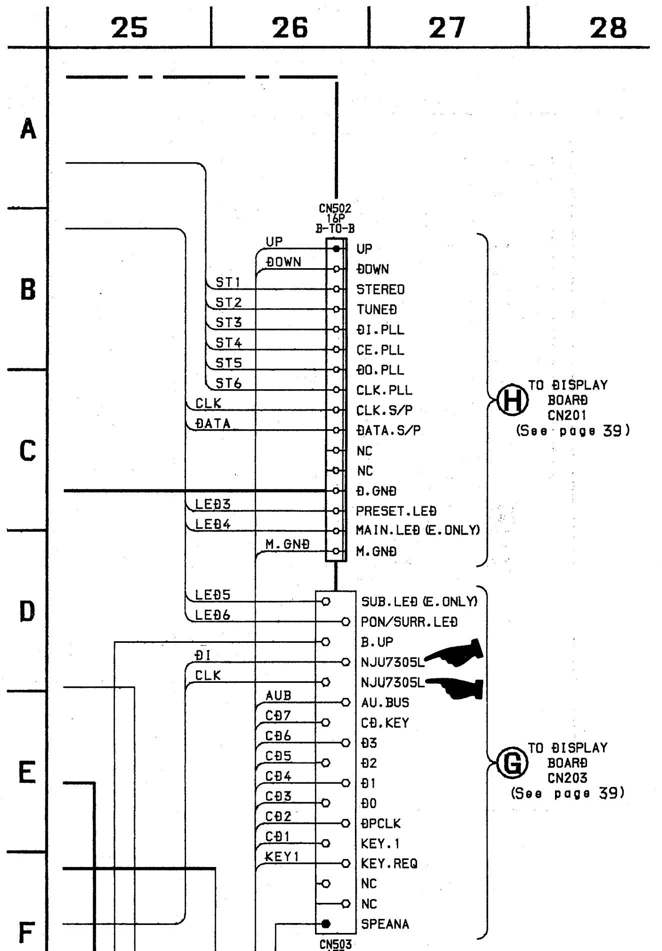
- **SCHEMATIC DIAGRAM – MAIN SECTION –** (Service Manual See page 19, 20)


3
4
5
6
7
8
9
10
A
B
C
D
E
F
G
H
【MAIN BOARD】
ANT1 TELESCOPIC ANTENNA
FM 75Ω
GND
AM
TB1 ANTENNA
EXCEPT G, CA, IT MODEL
EXCEPT G, IT MODEL
G, CA, IT MODEL
G, IT MODEL
Q1, 2 RF AMP
Q3 B+ SWITCH
FM TUNED LIGHTING LEVEL
MW/SW SWITCHING
Q8 LW/SW OSC SWITCHING
Q4 MW OSC SWITCHING
Q5 MW/SW SWITCH
Q6 MW/SW SWITCHING
Q10, 11 LOW PASS FILTER
E, AUS, EA, MX, MY, SP MODEL
AEP, UK, EE MODEL
EXCEPT AEP, UK, EE MODEL
IT MODEL
IC1 LC7218
IFT1
EXCEPT G, IT MODEL

- **SCHEMATIC DIAGRAM – MAIN SECTION –** (Service Manual See page 20 – 22)

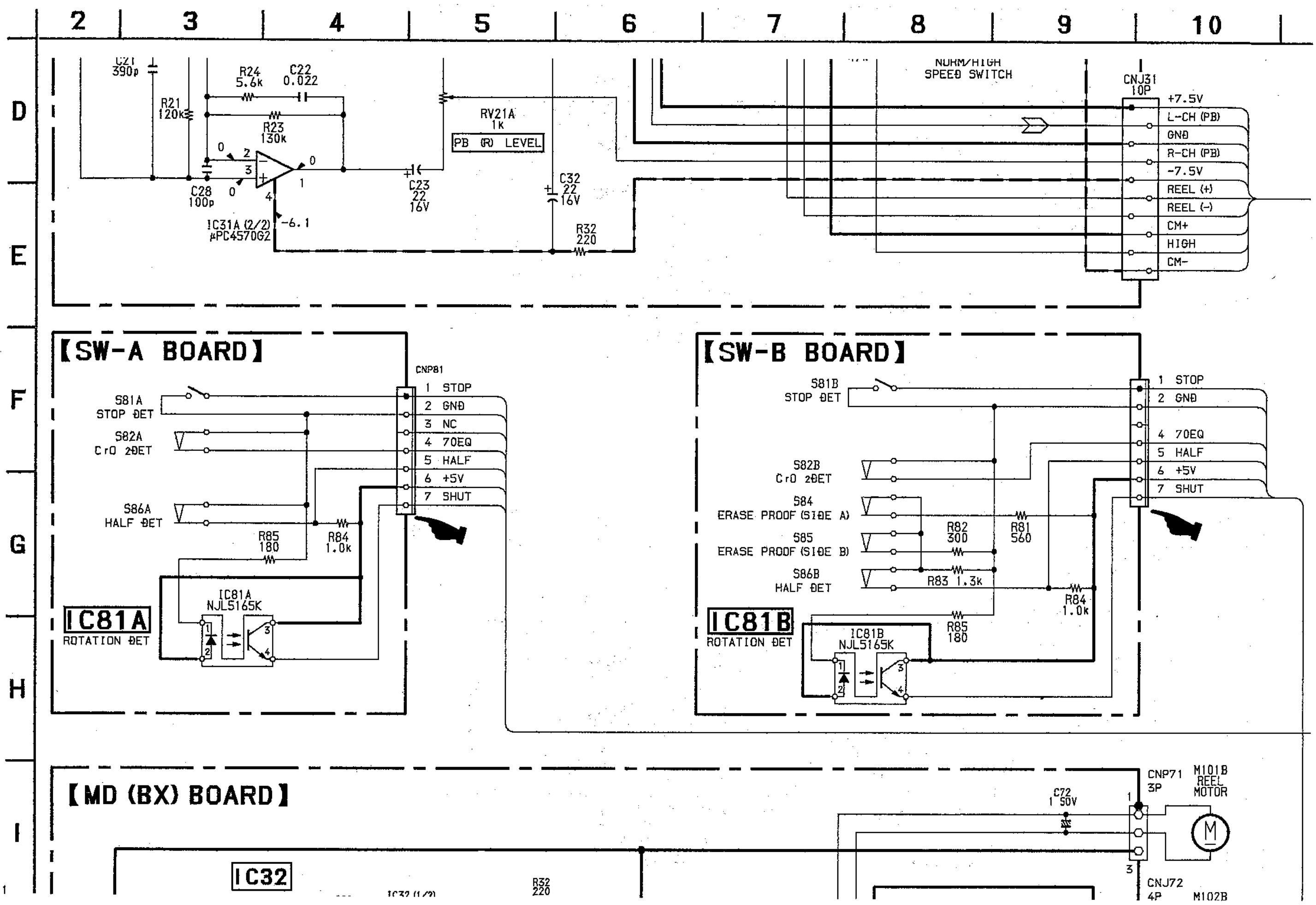

11
12
13
14
15
16
17
18
A
B
C
D
G, IT MODEL
CA MODEL
EXCEPT CA, G, IT MODEL
EXCEPT G, IT MODEL
L·P·F SWITCH
Q14, 15
LPF
FL2
FL3
FL1
IC2 LA1831
IC2 FM IF, AM IF MPX
PON
E, AUS, EA, MX, MY, SP MODEL
MPXA
MPXB
CBOFF
D501 1N4148
D503 1N4148
D504 1N4148
IC502 M5025SP
ON:0.4
OFF:4.4
EX


17
18
19
20
I
J
K
L
M
N
IC701 M5229P
IC701 GRAPHIC EQUALIZER
IC751 M5229P
IC751 GRAPHIC EQUALIZER
R708 5.6k
R758 5.6k
F2
F3
F4
F5
F6
F7

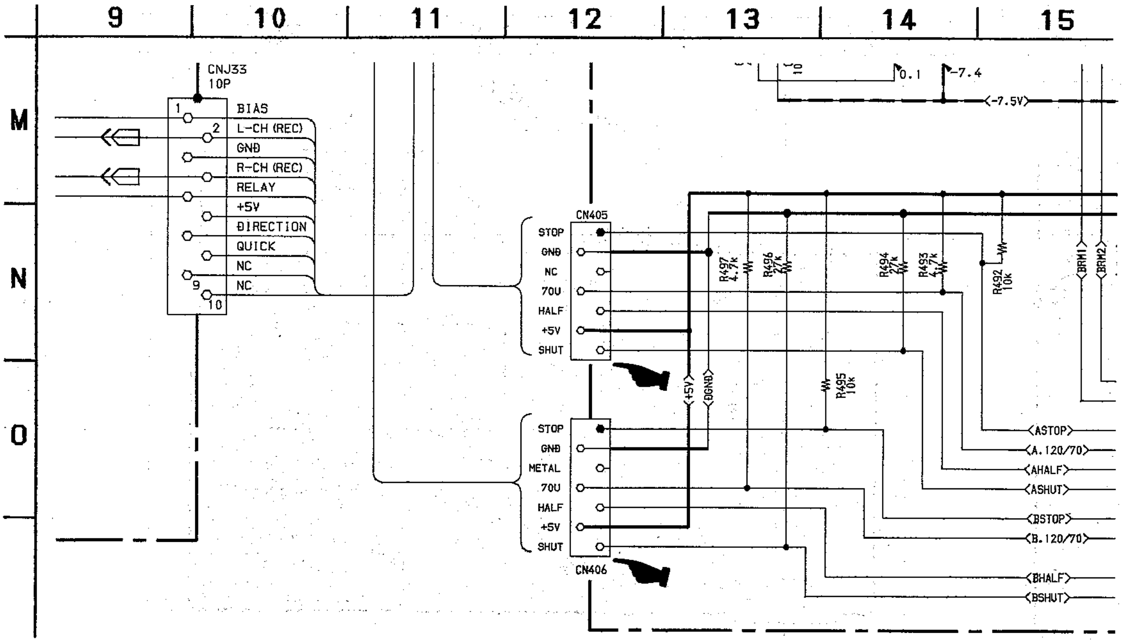

25
26
27
28
A
B
C
D
E
F
CN502 16P B-TO-B
CN503 17P FFC
UP
DOWN
STEREO
TUNED
DI.PLL
CE.PLL
DO.PLL
CLK.PLL
CLK.S/P
DATA.S/P
NC
D.GND
PRESET.LED
MAIN.LED (E.ONLY)
M.GND
SUB.LED (E.ONLY)
PON/SURR.LED
B.UP
NJU7305L
AU.BUS
CD.KEY
D3
D2
D1
D0
DPCLK
KEY.1
KEY.REQ
SPEANA
TO DISPLAY BOARD CN201 (See page 39)
TO DISPLAY BOARD CN203 (See page 39)

: corrected portion

• SCHEMATIC DIAGRAM – DECK SECTION – (Service Manual See page 24, 25)



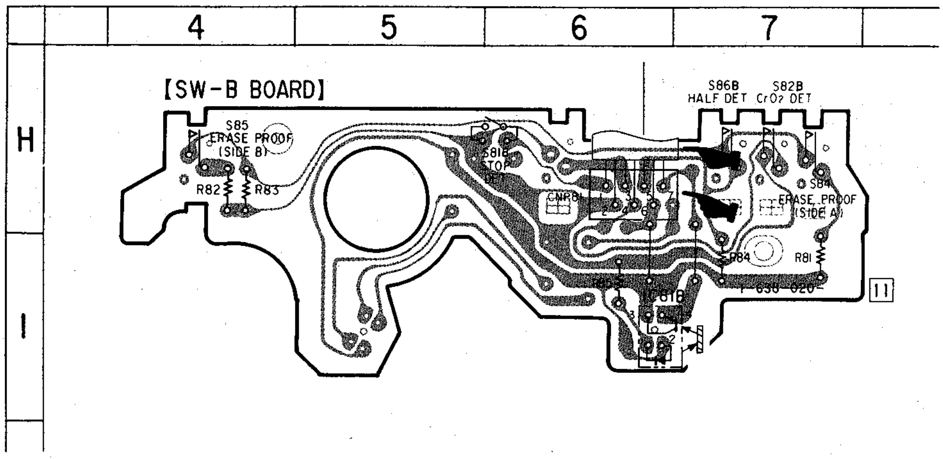
2
3
4
5
6
7
8
9
10
D
E
F
G
H
I
C21 390p
R21 120k
R24 5.6k
C22 0.022
R23 130k
C28 100p
IC31A (2/2) µPC4570G2
-6.1
RV21A 1k
PB (R) LEVEL
C23 22 16V
C32 22 16V
R32 220
NORM/HIGH SPEED SWITCH
CNJ31 10P
+7.5V
L-CH (PB)
GND
R-CH (PB)
-7.5V
REEL (+)
REEL (-)
CM+
HIGH
CM-
【SW-A BOARD】
CNP81
1 STOP
2 GND
3 NC
4 70EQ
5 HALF
6 +5V
7 SHUT
S81A STOP DET
S82A CrO 2DET
S86A HALF DET
R85 180
R84 1.0k
IC81A ROTATION DET
IC81A NJL5165K
【SW-B BOARD】
S81B STOP DET
S82B CrO 2DET
S84 ERASE PROOF (SIDE A)
S85 ERASE PROOF (SIDE B)
S86B HALF DET
R82 300
R81 560
R83 1.3k
R84 1.0k
R85 180
IC81B ROTATION DET
IC81B NJL5165K
1 STOP
2 GND
4 70EQ
5 HALF
6 +5V
7 SHUT
【MD (BX) BOARD】
C72 1 50V
CNP71 3P
M101B REEL MOTOR
CNJ72 4P
M102B
IC32
R32 220

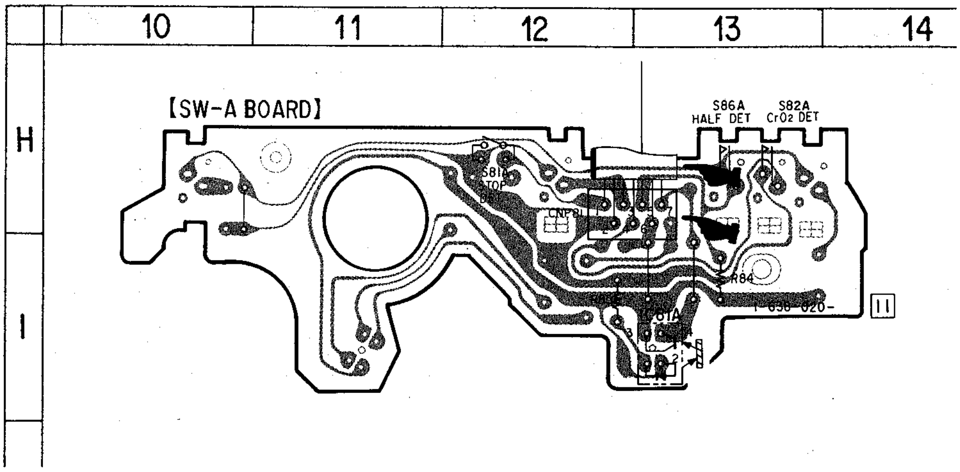


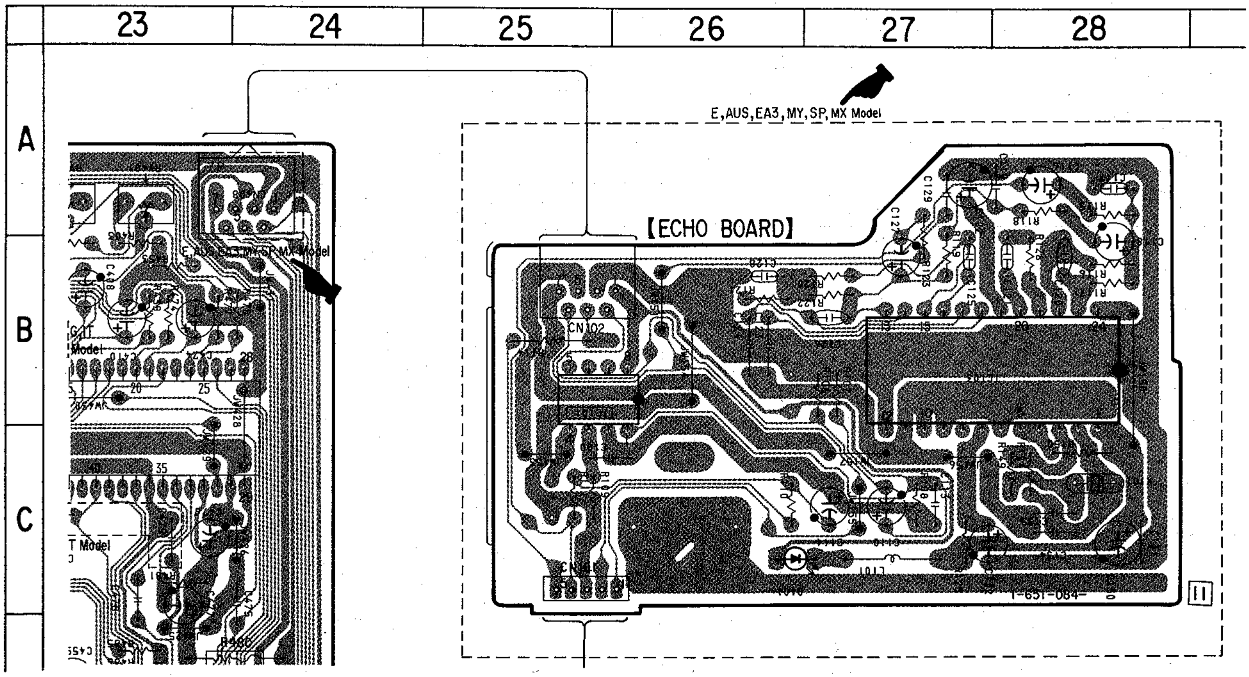
9
10
11
12
13
14
15
M
N
O
CNJ33 10P
BIAS
L-CH (REC)
GND
R-CH (REC)
RELAY
+5V
DIRECTION
QUICK
NC
NC
CN405
STOP
GND
NC
70U
HALF
+5V
SHUT
CN406
STOP
GND
METAL
70U
HALF
+5V
SHUT
-7.4
-7.5V
R497 4.7k
R496 27k
R494 27k
R493 4.7k
R492 10k
R495 10k
BRM1
BRM2
+5V
DGND
ASTOP
A.120/70
AHALF
ASHUT
BSTOP
B.120/70
BHALF
BSHUT

☛ : corrected portion

- **PRINTED WIRING BOARDS – DECK SECTION** – (Service Manual See page 29 – 32)

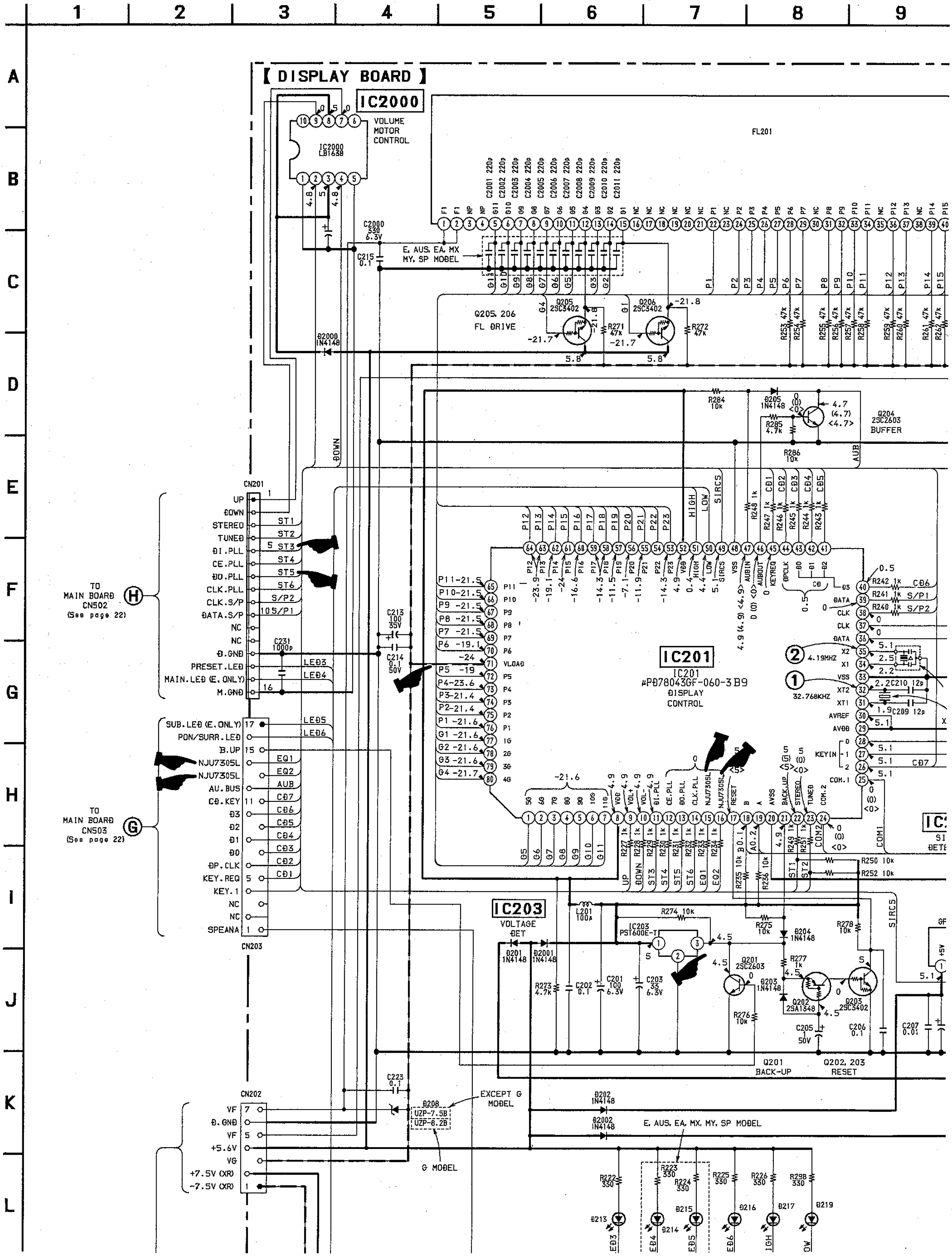

4
5
6
7
H
I
[SW-B BOARD]
S85
ERASE PROOF
(SIDE B)
R82
R83
S81B
STOP
DET
CNP81
S86B
HALF DET
S82B
CrO2 DET
S84
ERASE PROOF
(SIDE A)
R84
R81
S81B
1-638-020-
11


10
11
12
13
14
H
I
[SW-A BOARD]
S81A
STOP
DET
CNP81
S86A
HALF DET
S82A
CrO2 DET
R84
S81A
1-638-020-
11


23
24
25
26
27
28
A
B
C
E,AUS,EA3,MY,SP,MX Model
E,AUS,EA3,MY,SP,MX Model
[ECHO BOARD]
CN102
T Model
T Model
1-651-084-
11

☛ : corrected portion

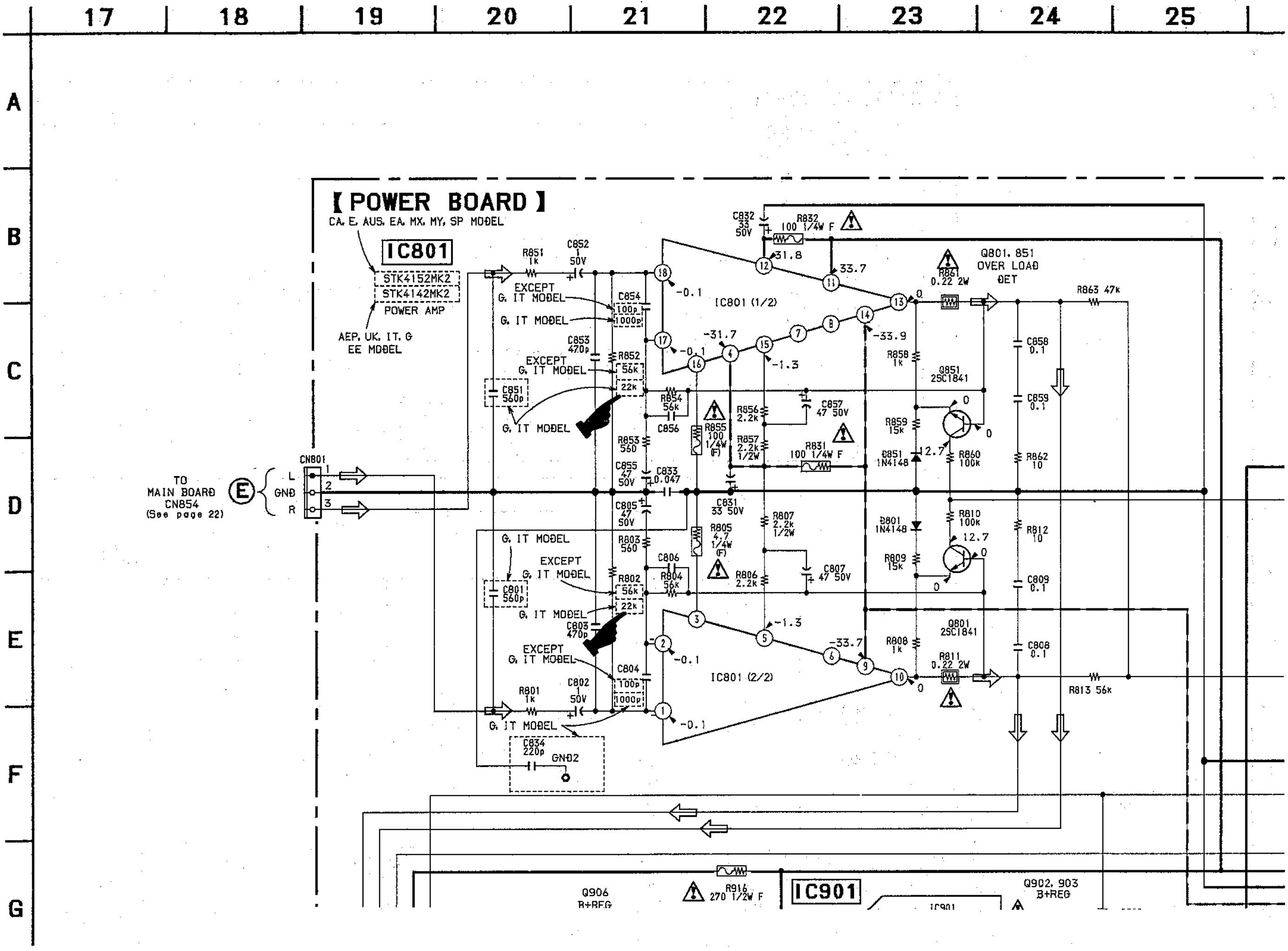
• SCHEMATIC DIAGRAM – DISPLAY SECTION – (Service Manual See page 39)



1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
G
H
I
J
K
L
【DISPLAY BOARD】
IC2000
VOLUME MOTOR CONTROL
IC2000 LB1638
C2000 330 6.3V
C215 0.1
E, AUS, EA, MX MY, SP MODEL
FL201
Q205, 206 FL DRIVE
Q205 2SC3402
Q206 2SC3402
R271 47k
R272 47k
D2000 1N4148
R284 10k
D205 1N4148
R285 4.7k
Q204 2SC2603 BUFFER
R286 10k
CN201
UP
DOWN
STEREO
TUNED
DI.PLL
CE.PLL
DO.PLL
CLK.PLL
CLK.S/P
DATA.S/P
NC
NC
D.GND
PRESET.LED
MAIN.LED (E. ONLY)
M.GND
TO MAIN BOARD CN502 (See page 22)
C213 100 35V
C214 0.1 50V
C231 1000p
IC201
IC201 μPD78043GF-060-3B9
DISPLAY CONTROL
4.19MHZ
32.768KHZ
C210 12p
C209 12p
SUB.LED (E. ONLY)
PON/SURR.LED
B.UP
NJU7305L
NJU7305L
AU.BUS
CD.KEY
D3
D2
D1
D0
DP.CLK
KEY.REQ
KEY.1
NC
NC
SPEANA
CN203
TO MAIN BOARD CN503 (See page 22)
IC203
VOLTAGE DET
IC203 PST600E-T
D201 1N4148
D2001 1N4148
L201 100μ
R273 4.7k
C202 0.1
C201 100 6.3V
C203 33 6.3V
R274 10k
R275 10k
D204 1N4148
R278 10k
Q201 2SC2603
R277 1k
D203 1N4148
Q202 2SA1348
Q203 2SC3402
R276 10k
C205 1 50V
C206 0.1
C207 0.01
Q201 BACK-UP
Q202, 203 RESET
R250 10k
R252 10k
CN202
VF
D.GND
VF
+5.6V
VG
+7.5V (XR)
-7.5V (XR)
C223 0.1
D208 UZP-7.5B UZP-6.2B
EXCEPT G MODEL
G MODEL
D202 1N4148
D2002 1N4148
E, AUS, EA, MX, MY, SP MODEL
R222 330
R223 330
R224 330
R225 330
R226 330
R298 330
D213
D214
D215
D216
D217
D219

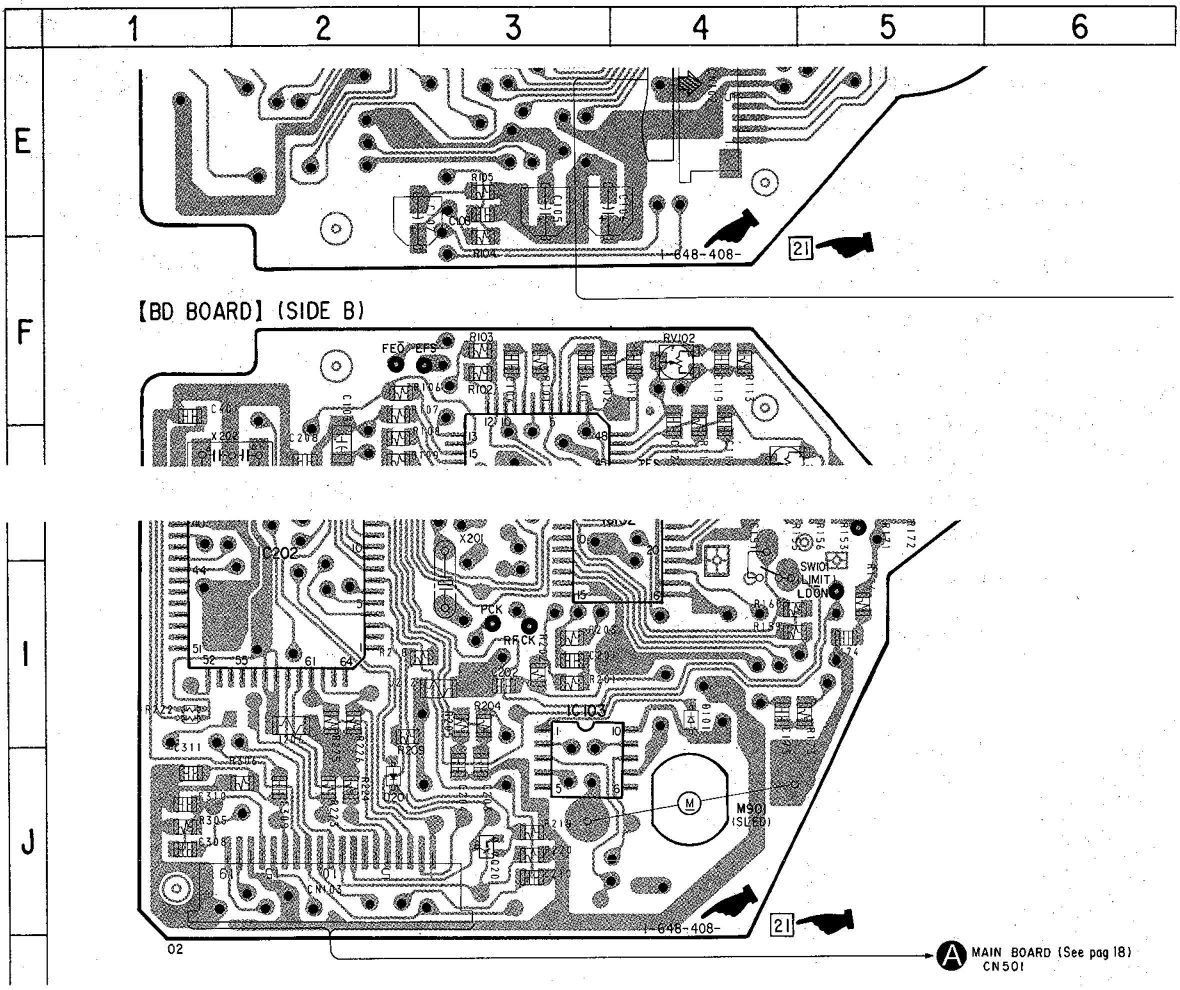
☛ : corrected portion

• SCHEMATIC DIAGRAM – DISPLAY SECTION – (Service Manual See page 41)


17
18
19
20
21
22
23
24
25
A
B
C
D
E
F
G
【POWER BOARD】
CA, E, AUS, EA, MX, MY, SP MODEL
IC801
STK4152MK2
STK4142MK2
POWER AMP
AEP, UK, IT, G
EE MODEL
TO
MAIN BOARD
CN854
(See page 22)
E
L
GND
R
CN801
1
2
3
R851
1k
C852
1
50V
EXCEPT
G, IT MODEL
G, IT MODEL
C854
100p
1000p
C853
470p
R852
56k
22k
C851
560p
R853
560
C855
47
50V
C833
0.047
C805
47
50V
R803
560
C806
R802
R804
56k
C801
560p
C803
470p
C804
100p
1000p
R801
1k
C802
1
50V
C834
220p
GND2
R854
56k
C856
R855
100
1/4W
(F)
R805
4.7
1/4W
(F)
C831
33 50V
R856
2.2k
R857
2.2k
1/2W
R807
2.2k
1/2W
R806
2.2k
C857
47 50V
C807
47 50V
R831
100 1/4W F
C832
33
50V
R832
100 1/4W F
31.8
33.7
-0.1
-31.7
-1.3
-33.9
-33.7
0
12.7
IC801 (1/2)
IC801 (2/2)
18
17
16
4
15
7
8
14
13
12
11
1
2
3
5
6
9
10
R861
0.22 2W
Q801, 851
OVER LOAD
DET
R863 47k
R858
1k
Q851
2SC1841
R859
15k
D851
1N4148
R860
100k
R810
100k
D801
1N4148
R809
15k
R808
1k
Q801
2SC1841
R811
0.22 2W
C858
0.1
C859
0.1
R862
10
R812
10
C809
0.1
C808
0.1
R813 56k
Q906
B+REG
R916
270 1/2W F
IC901
IC901
Q902, 903
B+REG

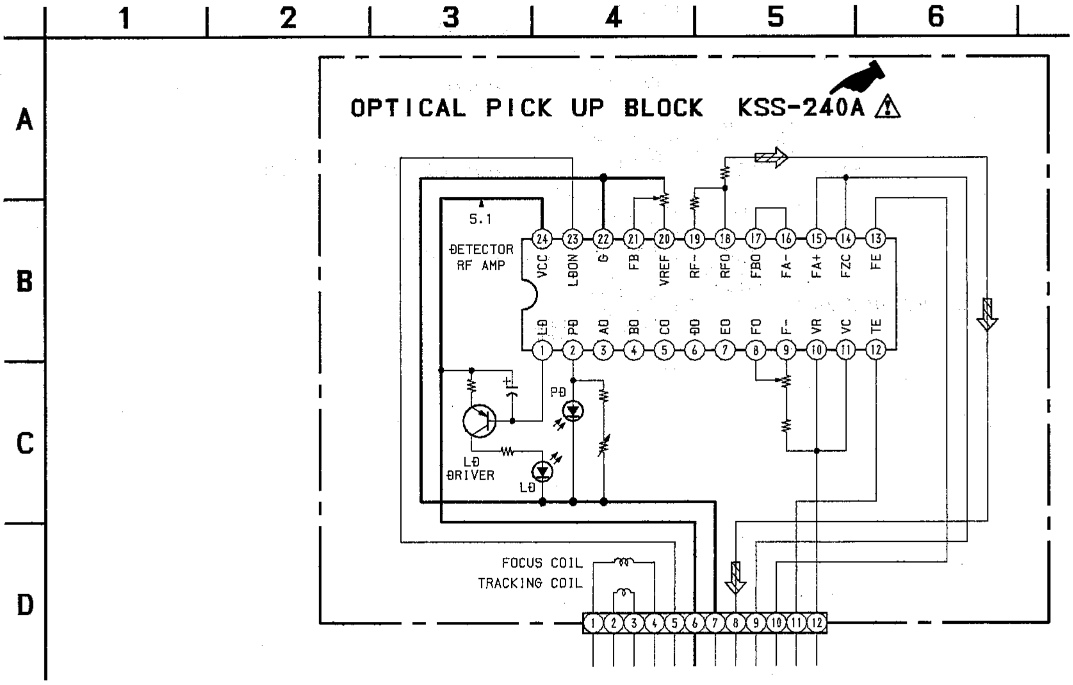
: corrected portion

• PRINTED WIRING BOARDS – CD SECTION – (Service Manual See page 47)



1
2
3
4
5
6
E
F
I
J
R105
C108
R104
C105
1-648-408-
21
[BD BOARD] (SIDE B)
FEO
EFS
R103
RV102
R106
R102
C40
X202
C208
IC202
X201
PCK
RFCK
SW101
(LIMIT)
LDON
R204
IC103
R209
M901
(SLED)
C311
R306
R305
CN103
1-648-408-
21
02
MAIN BOARD (See pag 18)
CN501

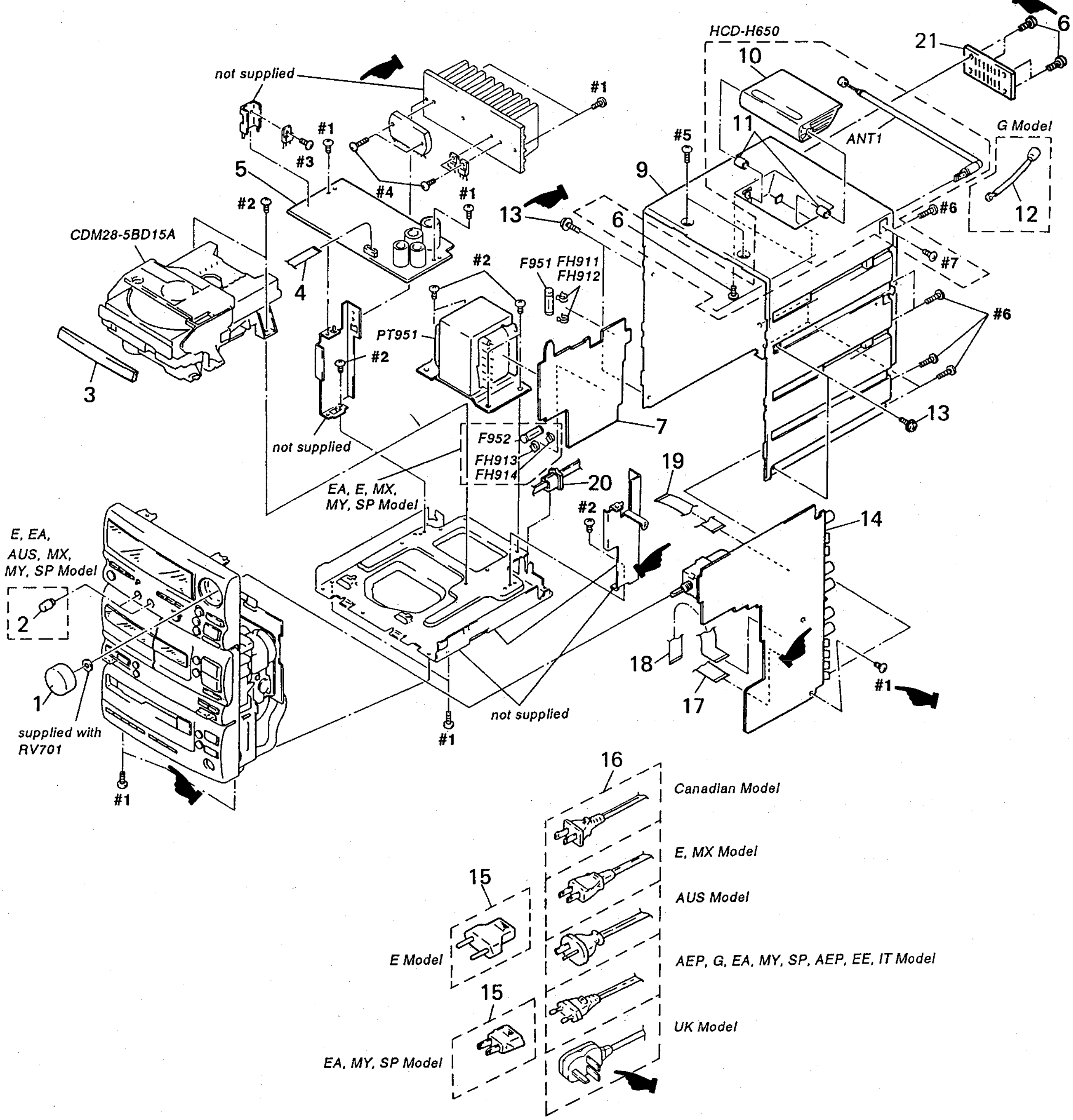
• SCHEMATIC DIAGRAM – CD SECTION – (Service Manual See page 49)



1
2
3
4
5
6
A
B
C
D
OPTICAL PICK UP BLOCK KSS-240A ⚠
5.1
DETECTOR
RF AMP
VCC
LDON
G
FB
VREF
RF-
RFO
FBO
FA-
FA+
FZC
FE
LD
PD
AO
BO
CO
DO
EO
FO
F-
VR
VC
TE
PD
LD
DRIVER
LD
FOCUS COIL
TRACKING COIL

☛ : **corrected portion**

- **EXPLODED VIEWS** (Service Manual See page 52)



HCD-H650
21
6
10
not supplied
#1
11
ANT1
G Model
#1
#5
#3
#4
#1
9
5
#2
13
6
#6
12
CDM28-5BD15A
#7
4
#2
F951
FH911
FH912
#6
PT951
#2
3
7
13
F952
FH913
FH914
not supplied
19
EA, E, MX, MY, SP Model
20
#2
14
E, EA, AUS, MX, MY, SP Model
2
18
1
17
#1
supplied with RV701
not supplied
#1
#1
16
Canadian Model
E, MX Model
15
AUS Model
E Model
AEP, G, EA, MY, SP, AEP, EE, IT Model
15
UK Model
EA, MY, SP Model

☛ : **corrected portion**

5-4. MECHANISM DECK SECTION-1 (Service Manual See page 56)
(DECK A : TCM-190RA12AL) ☛
(DECK B : TCM-190RB53A)

5-5. MECHANISM DECK SECTION-2 (Service Manual See page 57)
(DECK A : TCM-190RA12AL) ☛
(DECK B : TCM-190RB53A)

5-6. CD MECHANISM SECTION-1 (Service Manual See page 58)
(CDM28-5BD15A)
☛ ☛

- **ELECTRICAL PARTS LIST** (Servic Manual See page 64 – 80)

INCORRECT → **CORRECT**

Ref. No.	Part No.	Description	Part No.	Description	Remark
R2052 (Page 64)	1-249-429-11	CARBON 10K 5% 1/4W (G)	———		Deleted
C48 (Page 67)	1-130-485-00	MYLAR 0.015uF 5% 50V (EXCEPT Canadian)	1-130-485-00	MYLAR 0.15uF 5% 50V (EXCEPT Canadian, G, IT)	Changed
C48 (Page 67)	———		1-130-489-00	MYLAR 0.012uF 5% 50V (G, IT)	Added
C49 (Page 67)	1-130-485-00	MYLAR 0.15uF 5% 50V (EXCEPT Canadian)	1-130-485-00	MYLAR 0.15uF 5% 50V (EXCEPT Canadian, G, IT)	Changed
C49 (Page 67)	———		1-130-489-00	MYLAR 0.012uF 5% 50V (G, IT)	Added
C66 (Page 67)	1-162-294-31	CERAMIC 0.001uF 10% 50V	1-162-294-31	CERMIC 0.001uF 10% 50V (EXCEPT G, IT)	Changed
C507 (Page 67)	1-161-379-00	CERAMIC 0.01uF 20% 25V	1-164-159-11	CERAMIC 0.1uF 20% 50V	Changed
C1002 (Page 68)	———		1-162-205-31	CERAMIC 18PF 5% 50V (G, IT)	Added
R7 (Page 69)	1-247-807-31	CARBON 100 5% 1/4W	1-247-807-31 1-247-811-31	CARBON 100 5% 1/4W (EXCEPT G, IT) CARBON 150 5% 1/4W (G, IT)	Changed
R12 (Page 69)	1-249-437-11	CARBON 47K 5% 1/4W	1-249-429-11	CARBON 10K 5% 1/4W	Changed
R59 (Page 70)	1-249-431-11	CARBON 15K 5% 1/4W	1-249-431-11 1-249-437-11	CARBON 15K 5% 1/4W (EXCEPT G, IT) CARBON 47K 5% 1/4W (G, IT)	Changed
R60 (Page 70)	1-249-431-11	CARBON 15K 5% 1/4W	1-249-431-11 1-249-437-11	CARBON 15K 5% 1/4W (EXCEPT G, IT) CARBON 47K 5% 1/4W (G, IT)	Changed
R63 (Page 70)	1-249-412-11	CARBON 390 5% 1/4W	1-249-412-11 1-247-820-11	CARBON 390 5% 1/4W (EXCEPT G, IT) CARBON 360 5% 1/4W (G, IT)	Changed
R64 (Page 70)	1-249-412-11	CARBON 390 5% 1/4W	1-249-412-11 1-247-820-11	CARBON 390 5% 1/4W (EXCEPT G, IT) CARBON 360 5% 1/4W (G, IT)	Changed
R708 (Page 71)	1-249-427-11	CARBON 6.8K 5% 1/4W	1-249-426-11	CARBON 5.6K 5% 1/4W	Changed
R758 (Page 71)	1-249-427-11	CARBON 6.8K 5% 1/4W	1-249-426-11	CARBON 5.6K 5% 1/4W	Changed
C780 (Page 74)	———		1-161-379-00	CERAMIC 0.01uF 20% 25V (G, IT)	Added
R802 (Page 75)	1-249-438-11	CARBON 56K 5% 1/4W	1-249-433-11	CARBON 22K 5% 1/4W	Changed
R852 (Page 71)	1-249-438-11	CARBON 56K 5% 1/4W	1-249-433-11	CARBON 22K 5% 1/4W	Changed
#11 (Page 80)	7-621-255-15	SCREW +P 2X3	———		Deleted

HCD-H650/H650M

SONY

SERVICE MANUAL

AEP Model
E Model
Australian Model
HCD-H650

Canadian Model
AEP Model
UK Model
HCD-H650M

SUPPLEMENT-1

File this Supplement with the Service Manual.

Subject :

1. MECHANICAL ADJUSTMENTS
2. EXPLANATION OF IC TERMINALS
3. IC BLOCK DIAGRAM
4. BLOCK DIAGRAM
5. CORRECTION

This appliance is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT MARKING is located on the rear exterior.

CLASS 1 LASER PRODUCT
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Laser component in this product is capable of emitting radiation exceeding the limit for Class 1.

The following caution label is located inside the unit.

CAUTION :	INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM.
ADVARSEL :	USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.
VARO! :	AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA LASERSÄTEILYLLE.
VARNING :	LASERSTRÅLING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD.
ADVARSEL :	USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES UNNGÅ EKSPONERING FOR STRÅLEN.

TABLE OF CONTENTS

Title *Page*

SPECIFICATIONS 2
MECHANICAL ADJUSTMENTS 3
EXPLANATION OF IC TERMINALS 4
IC BLOCK DIAGRAM 8

Title *Page*

BLOCK DIAGRAM (1) 9
BLOCK DIAGRAM (2) 11
CORRECTION 15

Sony Corporation
Consumer A&V Products Company
Home A&V Products Div.

9-959-291-81

English
94G0283-1
Printed in Japan

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Published by Home A&V Products Div.
Quality Engineering Dept.

EXPLANATION OF IC TERMINALS

IC201 DISPLAY CONTROLLER (µPD78043GF-060-3B9)

Pin No.	Pin name	I/O	Description
1	5G	O	FL display drive.
2	6G	O	
3	7G	O	
4	8G	O	
5	9G	O	
6	10G	O	
7	11G	O	
8	VDD	–	+5v.
9	VOL+	O	Volume motor control output. "H" : Volume up
10	VOL –	O	Volume motor control output. "H" : Volume down
11	DI • PLL	I	Serial data input from tuner PLL IC. (LC7218)
12	CE • PLL	O	Chip select output to tuner PLL IC. (LC7218)
13	DO • PLL	O	Serial data output to tuner PLL IC. (LC7218)
14	CLK • PLL	O	Serial clock output to tuner PLL IC. (LC7218)
15	DI • 7522	O	Serial data output equalizer controller. (IC731, NJU7305L)
16	CLK • 7522	O	Serial clock output equalizer controller. (IC731, NJU7305L)
17	RESET	I	Reset. "L" : Reset
18	B	O	Spectrum analyzer input switching output.
19	A	O	
20	AVss	–	GND
21	BACK • UP	I	Backup mode detection input. "L" : Backup mode
22	STEREO	I	Stereo discrimination from FM/AM IF amplifier (LA1831). "L" : Stereo
23	TUNED	I	Tuning discrimination from FM/AM IF amplifier (LA1831). "L" : Tuning
24	COM2	I	Spectrum analyzer input. (63Hz, 250Hz, 1kHz)
25	COM1	I	Spectrum analyzer input. (4kHz, 10kHz)
26	KEY. IN2	I	Key input.
27	KEY. IN1	I	
28	KEY. IN0	I	
29	AVDD	–	+5V power supply.
30	AV. REF	–	+5V power supply.
31	XT1	I	Subsystem clock (32.768kHz). Connected to crystal oscillator.
32	XT2	O	
33	Vss	–	GND
34	X1	I	System clock (4.19MHz). Connected to crystal oscillator.
35	X2	O	
36	DATA	I/O	Write/read data I/O with EEPROM (X24C01P)
37	CLK	O	Serial clock output to EEPROM (X24C01P)
38	CLK	O	Serial clock output to 16-bit serial/parallel converter. (M50255P)
39	DATA	O	Serial data output to 16-bit serial/parallel converter. (M50255P)
40	D3	I/O	Dispaly data 3 input and key data 3 output with CD controller. (µ PD75116GF)

Pin No.	Pin name	I/O	Description
41	D2	I/O	Display data 2 input and key data 2 output with CD controller. (μ PD75116GF)
42	D1	I/O	Display data 1 input and key data 1 output with CD controller.(μ PD75116GF)
43	D0	I/O	Display data 0 input and key data 0 output with CD controller. (μ PD75116GF)
44	DPCLK	I	Serial clock input from CD controller. (μ PD75116GF)
45	KEYREQ	O	Key data outpu request to CD controller.. (μ PD75116GF)
46	AUBOUT	O	Audio bus output.
47	AUBIN	I	Audio bus input.
48	Vss	–	GND
49	SIRCS	O	Infrared remote commander signal input.
50	LOW	O	DBS LOW LED output.
51	HIGH	O	DBS HIGH LED output.
52	VDD	–	+5V power supply.
53	P23	O	FL display drive.
54	P22	O	
55	P21	O	
56	P20	O	
57	P19	O	
58	P18	O	
59	P17	O	
60	P16	O	
61	P15	O	
62	P14	O	
63	P13	O	
64	P12	O	
65	P11	O	
66	P10	O	
67	P9	O	
68	P8	O	
69	P7	O	
70	P6	O	
71	VLOAD	–	– 24V power supply for dirving FL display.
72	P5	O	FL display drive.
73	P4	O	
74	P3	O	
75	P2	O	
76	P1	O	
77	1G	O	
78	2G	O	
79	3G	O	
80	4G	O	

IC301 DECK CONTROLLER (M50964-260FP)

<table>
<tr><th>Pin No.</th><th>Pin name</th><th>I/O</th><th>Description</th></tr>
<tr><td>1</td><td>G</td><td></td><td>GND</td></tr>
<tr><td>2</td><td>G</td><td></td><td>GND</td></tr>
<tr><td>3</td><td>G</td><td></td><td>GND</td></tr>
<tr><td>4</td><td></td><td></td><td>Connected +5V.</td></tr>
<tr><td>5</td><td>G</td><td></td><td>GND</td></tr>
<tr><td>6</td><td>B HALF</td><td>I</td><td>Deck B record prevention claw A, B detection input. (Analog)
<table>
<tr><td>Voltage (V)</td><td>1V</td><td>1.9V</td><td>2.8V</td><td>3.9V</td><td>5V</td></tr>
<tr><td>Half</td><td>ON</td><td>ON</td><td>ON</td><td>ON</td><td>OFF</td></tr>
<tr><td>E. PROOF A</td><td>OFF</td><td>ON</td><td>OFF</td><td>ON</td><td>OFF</td></tr>
<tr><td>E. PROOF B</td><td>ON</td><td>ON</td><td>OFF</td><td>OFF</td><td>OFF</td></tr>
</table></td></tr>
<tr><td>7</td><td>KEY Y</td><td>I</td><td rowspan="2">KEY input.
<table>
<tr><td>Voltage (V)</td><td>0</td><td>0.3</td><td>0.7</td><td>1.2</td><td>1.7</td><td>2.3</td><td>2.8</td><td>3.4</td><td>4.0</td><td>4.5</td><td>5.0</td></tr>
<tr><td>KEY Y</td><td></td><td></td><td></td><td></td><td></td><td>A ◀◀</td><td>A ▶▶</td><td></td><td></td><td>RELAY</td><td>OFF</td></tr>
<tr><td>KEY X</td><td>A ■</td><td>A ▶</td><td>A ◀</td><td></td><td></td><td></td><td>HIGH SPEED DUBBING</td><td></td><td>CD</td><td></td><td></td></tr>
</table></td></tr>
<tr><td>8</td><td>KEY X</td><td>I</td></tr>
<tr><td>9</td><td>AMS IN</td><td>I</td><td>AMS signal input.</td></tr>
<tr><td>10</td><td>LM $\overline{\text{ON}}$/OFF</td><td>O</td><td>Line mute output.</td></tr>
<tr><td>11</td><td>RM $\overline{\text{ON}}$/OFF</td><td>O</td><td>Mute output.</td></tr>
<tr><td>12</td><td>RELAY $\overline{\text{ON}}$/OFF</td><td>O</td><td>Control output to REC/PB select switch. (IC31)</td></tr>
<tr><td>13</td><td>$\overline{\text{REC}}$/PB</td><td>O</td><td>Dolby IC REC/PB select output.</td></tr>
<tr><td>14</td><td>EQ70</td><td>O</td><td>Playback EQ output for playing deck. (Not used) (Open)</td></tr>
<tr><td>15</td><td>SEL A/$\overline{\text{B}}$</td><td>O</td><td>Dolby IC PB input Deck A/B select output.</td></tr>
<tr><td>16</td><td>AMS A/$\overline{\text{B}}$</td><td>O</td><td>AMS AMP input Deck A/B select output. (Not used) (Open)</td></tr>
<tr><td>17</td><td>AU BUS</td><td>I</td><td>AUDIO BUS input.</td></tr>
<tr><td>18</td><td>$\overline{\text{BIAS}}$ ON/$\overline{\text{OFF}}$</td><td>O</td><td>Bias oscillation output.</td></tr>
<tr><td>19</td><td>AUB OUT</td><td>O</td><td>AUDIO BUS output.</td></tr>
<tr><td>20</td><td>A BUS</td><td>I</td><td>AUDIO BUS normal input.</td></tr>
<tr><td>21</td><td>NC</td><td>–</td><td>Not used.</td></tr>
<tr><td>22</td><td>NC</td><td>–</td><td>Not used.</td></tr>
<tr><td>23</td><td>NC</td><td>–</td><td>Not used.</td></tr>
<tr><td>24</td><td>Vss</td><td></td><td>GND</td></tr>
<tr><td>25</td><td>$\overline{\text{RESET}}$</td><td>I</td><td>Microcomputer reset input.</td></tr>
<tr><td>26</td><td>XIN</td><td>I</td><td>Clock input. (4MHz)</td></tr>
<tr><td>27</td><td>XOUT</td><td>O</td><td>Clock output. (4MHz)</td></tr>
<tr><td>28</td><td>ϕ</td><td>O</td><td>Not used. (Open)</td></tr>
<tr><td>29</td><td>Vss</td><td></td><td>GND</td></tr>
<tr><td>30</td><td>PW IN</td><td>I</td><td>POWER OFF detection input.</td></tr>
<tr><td>31</td><td>A STOP</td><td>I</td><td>Deck A STOP switch input.</td></tr>
<tr><td>32</td><td>A HLAF</td><td>I</td><td>Deck A Half switch input.</td></tr>
<tr><td>33</td><td>A SHUT</td><td>I</td><td>Deck A Reel table signal input.</td></tr>
<tr><td>34</td><td>A70U</td><td>I</td><td>Deck A TYPE switch input. (Not used) (Open)</td></tr>
<tr><td>35</td><td>B STOP</td><td>I</td><td>Deck B STOP switch input.</td></tr>
</table>

Pin No.	Pin name	I/O	Description
36	B SHUT	I	Deck B Reel table signal input.
37	B70U	I	Deck B TYPE switch input. (Not used) (Open)
38	NC	–	Not used.
39	ARM 3	O	Deck A Reel Motor control out.
40	ARM 2	O	Deck A Reel Motor control out.
41	ARM 1	O	Deck A Reel Motor control out.
42	BRM 3	O	Deck B Reel Motor control out.
43	BRM 2	O	Deck B Reel Motor control out.
44	BRM 1	O	Deck B Reel Motor control out.
45	H/L	O	Capstan motor speed select.
46	A CM	O	A Capstan motor ON/OFF.
47	B CM	O	B Capstan motor ON/OFF.
48	BS/ASCH	I	Deck A Reel table/BS signal input.
49	A•P/BSCH	I	Deck B Reel table/A•P signal input.
50	A•REV	O	Deck A RVS LED output.
51	A•FWD	O	Deck A FWD LED output.
52	A PLAY	O	Deck B RVS/FWD LED control output. (Not used) (Open)
53	DUB H	O	High Speed Dubbing LED output.
54	DUB N	O	Normal Speed Dubbing LED output. (Not used) (Open)
55	NC	–	Not used.
56	CD SYNC	O	Auto CD Synchro LED output.
57	B•REV	O	Deck B RVS LED output.
58	B•FWD	O	Deck B FWD LED output.
59	B PLAY	O	Deck B RVS/FWD LED control output. (Not used) (Open)
60	B PAUSE	O	Deck B PAUSE LED output.
61	B•REC	O	Deck B REC LED output.
62	PASS	O	PASS amplifier switch output to Dolby IC. (IC401)
63	TEST	I	Electrical adjustment test mode setting.
64	NC	–	Not used.
65	Vss		GND
66	NC	–	Not used.
67	Vss		POWER 5 ± 0.5V.
68	AVss		Analog system GND.
69	VREF	I	Analog system reference voltage input.
70	DAC		GND
71	——		GND
72	——		GND

[TEST MODE]

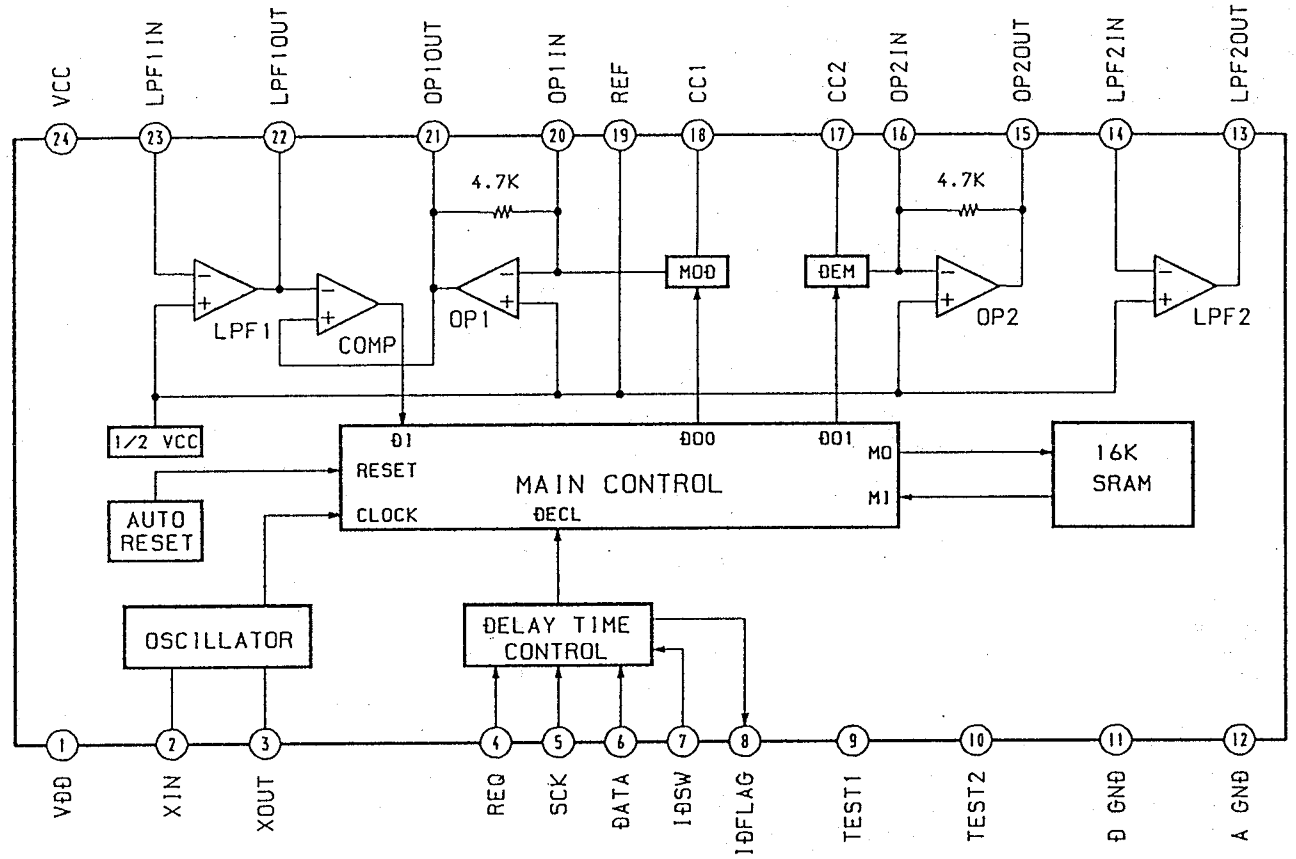
When making pin (63) low (connect TP1 to ground with jumper wire), following function operates.

Source monitor

release the line mute while recording

- **IC BLOCK DIAGRAM**

IC103 M65830AP (Service Manual See page 26)


VCC
LPF1IN
LPF1OUT
OP1OUT
OP1IN
REF
CC1
CC2
OP2IN
OP2OUT
LPF2IN
LPF2OUT
24
23
22
21
20
19
18
17
16
15
14
13
4.7K
4.7K
LPF1
COMP
OP1
MOD
DEM
OP2
LPF2
1/2 VCC
AUTO RESET
DI
RESET
CLOCK
DO0
DO1
DECL
MAIN CONTROL
MO
MI
16K SRAM
OSCILLATOR
DELAY TIME CONTROL
1
2
3
4
5
6
7
8
9
10
11
12
VDD
XIN
XOUT
REQ
SCK
DATA
IDSW
IDFLAG
TEST1
TEST2
D GND
A GND

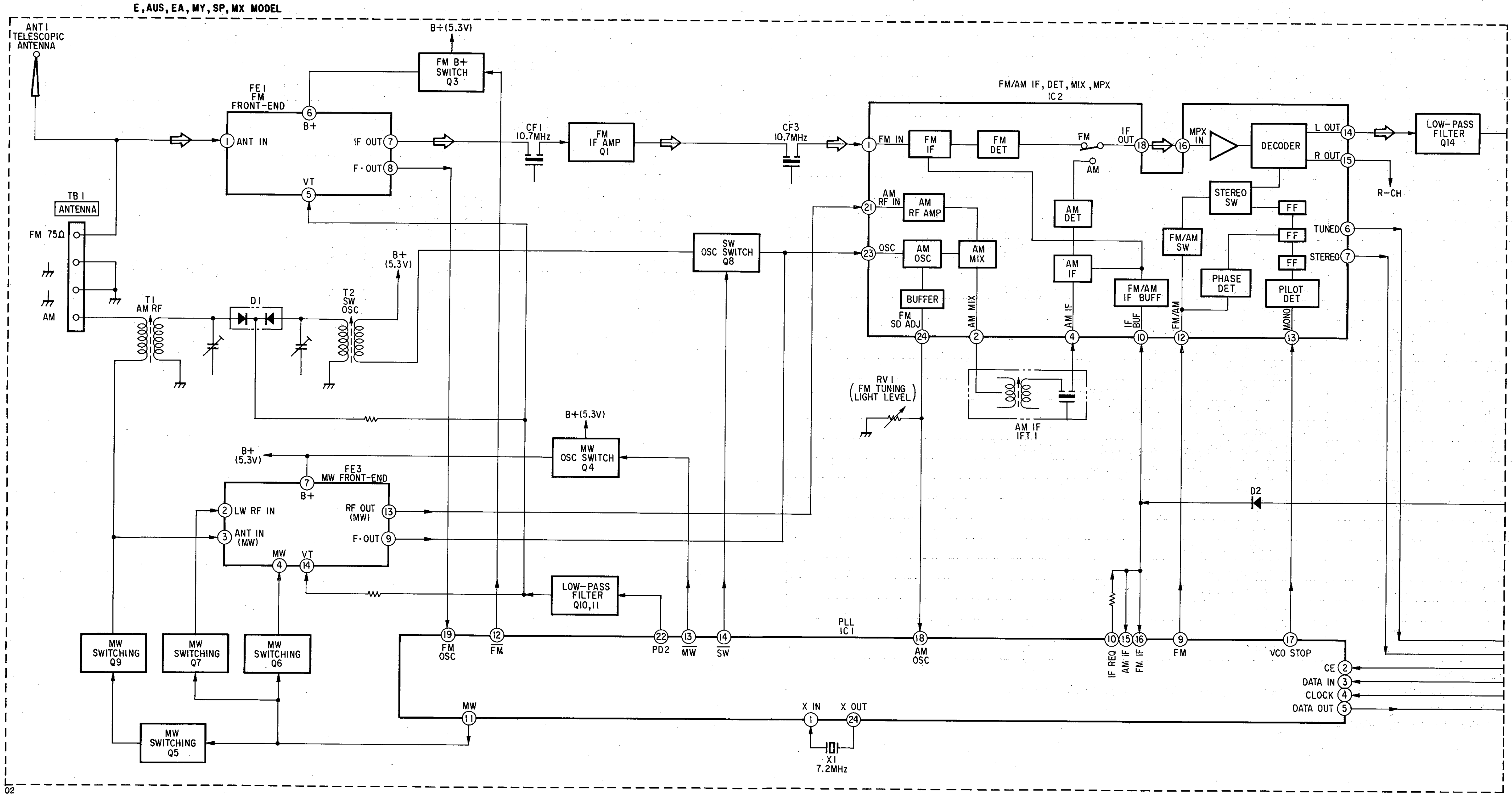
BLOCK DIAGRAMS (1)

- Abbreviations

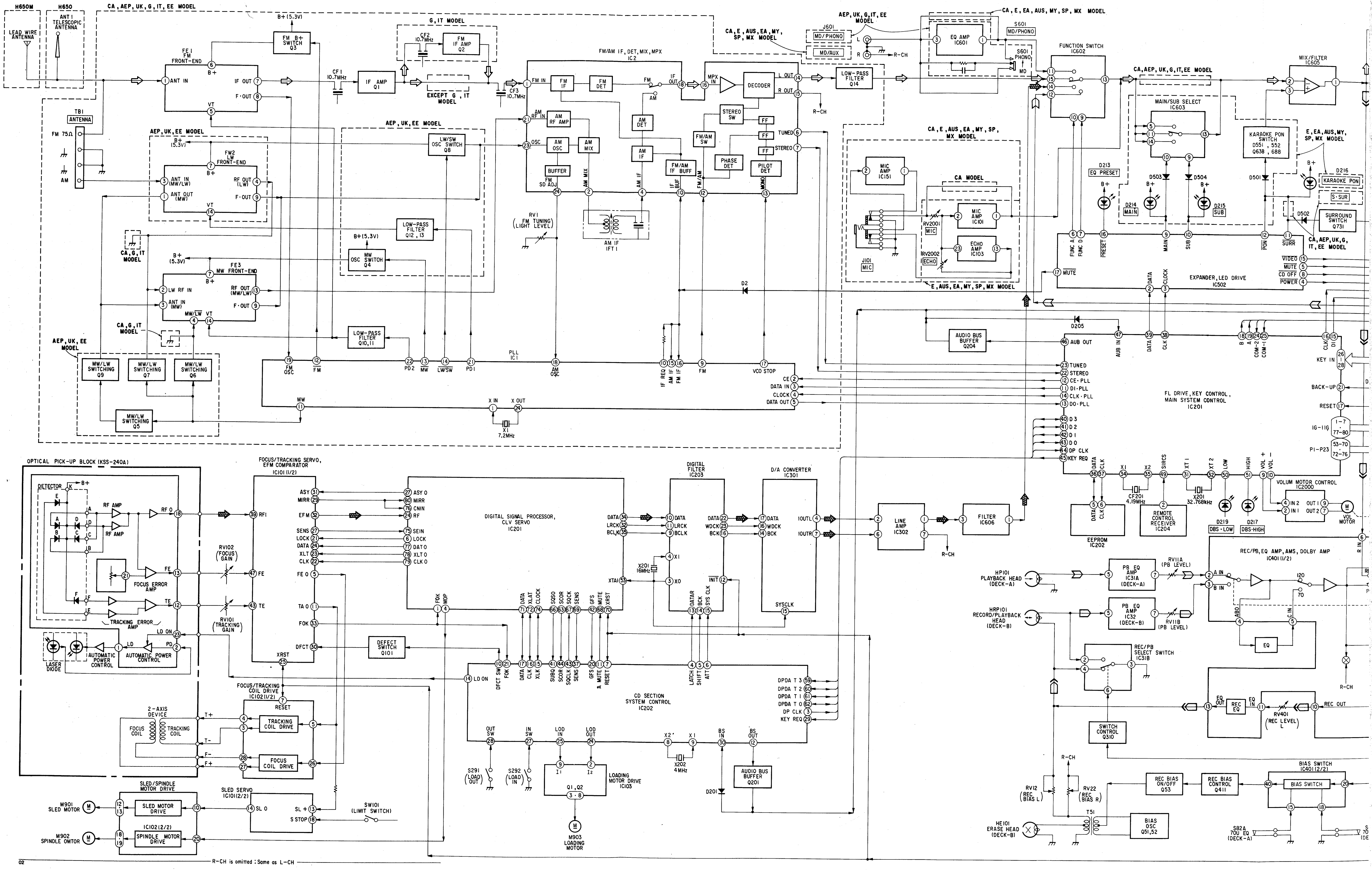
CA	: Canadian	EA	: Saudi Arabia
AUS	: Australian	EE	: East European
G	: German	MY	: Malaysia
IT	: Italian	SP	: Singapore
MX	: Mexican		

- Signal path.

⇨ : FM
⇨ : PB (DECK-A)
▭ : PB (DECK-B)
⇨ : REC (DECK-B)
⇨ : CD

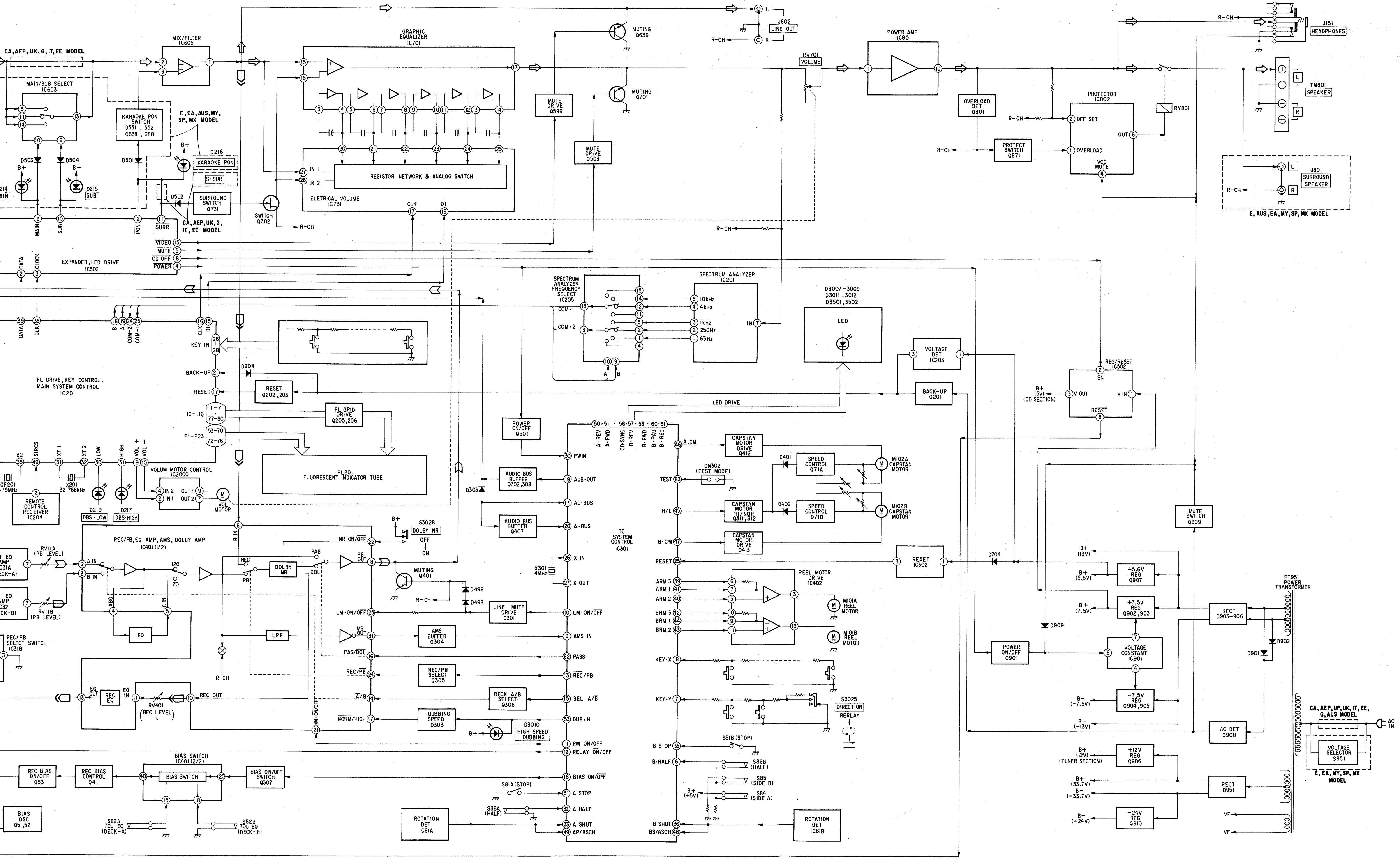

E, AUS, EA, MY, SP, MX MODEL
ANT1 TELESCOPIC ANTENNA
B+(5.3V)
FM B+ SWITCH Q3
FE1 FM FRONT-END
ANT IN
B+
IF OUT
F·OUT
VT
CF1 10.7MHz
FM IF AMP Q1
CF3 10.7MHz
FM/AM IF, DET, MIX, MPX IC2
FM IN
FM IF
FM DET
FM
AM
IF OUT
MPX IN
DECODER
L OUT
R OUT
LOW-PASS FILTER Q14
R-CH
TB1 ANTENNA
FM 75Ω
AM
AM RF IN
AM RF AMP
AM DET
STEREO SW
FF
TUNED
STEREO
SW OSC SWITCH Q8
OSC
AM OSC
AM MIX
AM IF
FM/AM SW
PHASE DET
PILOT DET
B+ (5.3V)
T1 AM RF
D1
T2 SW OSC
BUFFER
FM/AM IF BUFF
FM SD ADJ
AM MIX
AM IF
IF BUF
FM/AM
MONO
RV1 (FM TUNING LIGHT LEVEL)
AM IF IFT1
B+(5.3V)
MW OSC SWITCH Q4
B+ (5.3V)
FE3 MW FRONT-END
B+
LW RF IN
ANT IN (MW)
RF OUT (MW)
F·OUT
MW
VT
D2
LOW-PASS FILTER Q10,11
PLL IC1
FM OSC
FM
PD2
MW
SW
AM OSC
IF REQ
AM IF
FM IF
FM
VCO STOP
CE
DATA IN
CLOCK
DATA OUT
MW SWITCHING Q9
MW SWITCHING Q7
MW SWITCHING Q6
MW
X IN
X OUT
X1 7.2MHz
MW SWITCHING Q5
02

BLOCK DIAGRAMS (2)


H650M
LEAD WIRE ANTENNA
H650
ANT1 TELESCOPIC ANTENNA
CA, AEP, UK, G, IT, EE MODEL
TB1 ANTENNA
FM 75Ω
AM
FE1 FM FRONT-END
ANT IN
IF OUT
F·OUT
VT
B+
B+(5.3V)
FM B+ SWITCH Q3
G, IT MODEL
CF2 10.7MHz
FM IF AMP Q2
CF1 10.7MHz
IF AMP Q1
EXCEPT G, IT MODEL
CF3 10.7MHz
FM/AM IF, DET, MIX, MPX IC2
FM IN
FM IF
FM DET
AM RF IN
AM RF AMP
OSC
AM OSC
AM MIX
BUFFER
FM SD ADJ
AM DET
AM IF
IF OUT
MPX IN
DECODER
L OUT
R OUT
STEREO SW
FM/AM SW
FM/AM IF BUFF
PHASE DET
PILOT DET
FF
TUNED
STEREO
MONO
AM IF IFT1
RV1 FM TUNING (LIGHT LEVEL)
AEP, UK, EE MODEL
FW2 LW FRONT-END
ANT IN (MW/LW)
ANT OUT (MW)
RF OUT (LW)
LW/SW OSC SWITCH Q8
LOW-PASS FILTER Q12, 13
MW OSC SWITCH Q4
CA, G, IT MODEL
FE3 MW FRONT-END
LW RF IN
ANT IN (MW)
RF OUT (MW/LW)
MW/LW
LOW-PASS FILTER Q10, 11
AEP, UK, EE MODEL
MW/LW SWITCHING Q9
MW/LW SWITCHING Q7
MW/LW SWITCHING Q6
MW/LW SWITCHING Q5
PLL IC1
FM OSC
FM
PD2
MW
LW/SW
PD1
AM OSC
IF REQ
AM IF
FM IF
VCO STOP
CE
DATA IN
CLOCK
DATA OUT
X IN
X OUT
X1 7.2MHz
R-CH
LOW-PASS FILTER Q14
CA, E, AUS, EA, MY, SP, MX MODEL
AEP, UK, G, IT, EE MODEL
J601 MD/PHONO
MD/AUX
CA, E, EA, AUS, MY, SP, MX MODEL
EQ AMP IC601
S601 MD/PHONO
PHONO
MD
FUNCTION SWITCH IC602
CA, E, AUS, EA, MY, SP, MX MODEL
MIC AMP IC151
CA MODEL
MIC AMP IC101
ECHO AMP IC103
RV2001 MIC
RV2002 ECHO
J101 MIC
E, AUS, EA, MY, SP, MX MODEL
D2
CA, AEP, UK, G, IT, EE MODEL
MAIN/SUB SELECT IC603
D213 EQ PRESET
D214 MAIN
D503
D504
D215 SUB
MIX/FILTER IC605
KARAOKE PON SWITCH D551, 552 Q638, 688
E, EA, AUS, MY, SP, MX MODEL
D501
D216 KARAOKE PON
S·SUR
D502
SURROUND SWITCH Q731
CA, AEP, UK, G, IT, EE MODEL
FUNC A
FUNC D
PRESET
MAIN
SUB
PON
SURR
MUTE
VIDEO
CD OFF
POWER
EXPANDER, LED DRIVE IC502
DATA
CLOCK
D205
AUDIO BUS BUFFER Q204
AUB OUT
AUB IN
CLK
COM-2
COM-1
DI
KEY IN
TUNED
STEREO
CE·PLL
DI·PLL
CLK·PLL
DO·PLL
FL DRIVE, KEY CONTROL, MAIN SYSTEM CONTROL IC201
BACK-UP
RESET
D3
D2
D1
D0
DP CLK
KEY REQ
X1
X2
SIRCS
XT1
XT2
LOW
HIGH
VOL+
VOL−
CF201 4.19MHz
X201 32.768kHz
REMOTE CONTROL RECEIVER IC204
EEPROM IC202
D219 DBS·LOW
D217 DBS·HIGH
VOLUM MOTOR CONTROL IC2000
VOL MOTOR
OPTICAL PICK-UP BLOCK (KSS-240A)
DETECTOR
RF AMP
RF O
FOCUS ERROR AMP
FE
TE
TRACKING ERROR AMP
LD ON
PD
LD
LASER DIODE
AUTOMATIC POWER CONTROL
RV102 FOCUS GAIN
RV101 TRACKING GAIN
FOCUS/TRACKING SERVO, EFM COMPARATOR IC101 (1/2)
RFI
ASY
MIRR
EFM
SENS
LOCK
XLT
CLK
FE O
TA O
FOK
DFCT
XRST
DEFECT SWITCH Q101
DIGITAL SIGNAL PROCESSOR, CLV SERVO IC201
ASY O
CNIN
RF
SEIN
DAT O
XLT O
CLK O
LRCK
BCLK
XTAI
X201 16MHz
MDP
DIGITAL FILTER IC203
WDCK
BCK
INIT
D/A CONVERTER IC301
SYSCLK
IOUTL
IOUTR
LINE AMP IC302
FILTER IC606
FOCUS/TRACKING COIL DRIVE IC102 (1/2)
2-AXIS DEVICE
FOCUS COIL
TRACKING COIL
TRACKING COIL DRIVE
FOCUS COIL DRIVE
RESET
CD SECTION SYSTEM CONTROL IC202
LD ON
DFCT SW
SUBQ
SCOR
SQCLK
SQSO
SQCK
GFS
A MUTE
LATCH
SHIFT
ATT
DPDA T3
DPDA T2
DPDA T1
DPDA T0
DP CLK
KEY REQ
OUT SW
IN SW
LOD IN
LOD OUT
BS IN
BS OUT
S291 (LOAD) OUT
S292 (LOAD) IN
Q1, Q2
LOADING MOTOR DRIVE IC103
M903 LOADING MOTOR
X202 4MHz
AUDIO BUS BUFFER Q201
D201
SLED/SPINDLE MOTOR DRIVE
SLED MOTOR DRIVE
IC102 (2/2)
SPINDLE MOTOR DRIVE
M901 SLED MOTOR
M902 SPINDLE OMTOR
SLED SERVO IC101 (2/2)
SL O
SL+
S STOP
SW101 (LIMIT SWITCH)
REC/PB, EQ AMP, AMS, DOLBY AMP IC401 (1/2)
HP101 PLAYBACK HEAD (DECK-A)
PB EQ AMP IC31A (DECK-A)
RV11A (PB LEVEL)
HRP101 RECORD/PLAYBACK HEAD (DECK-B)
PB EQ AMP IC32 (DECK-B)
RV11B (PB LEVEL)
A IN
B IN
ABO
C IN
120
70
EQ
REC/PB SELECT SWITCH IC31B
SWITCH CONTROL Q310
EQ OUT
REC EQ
EQ IN
RV401 (REC LEVEL)
REC OUT
R-CH
RV12 (REC BIAS L)
RV22 (REC BIAS R)
T51
HE101 ERASE HEAD (DECK-B)
BIAS OSC Q51, 52
REC BIAS ON/OFF Q53
REC BIAS CONTROL Q411
BIAS SWITCH IC401 (2/2)
BIAS SWITCH
S82A 70U EQ (DECK-A)

02

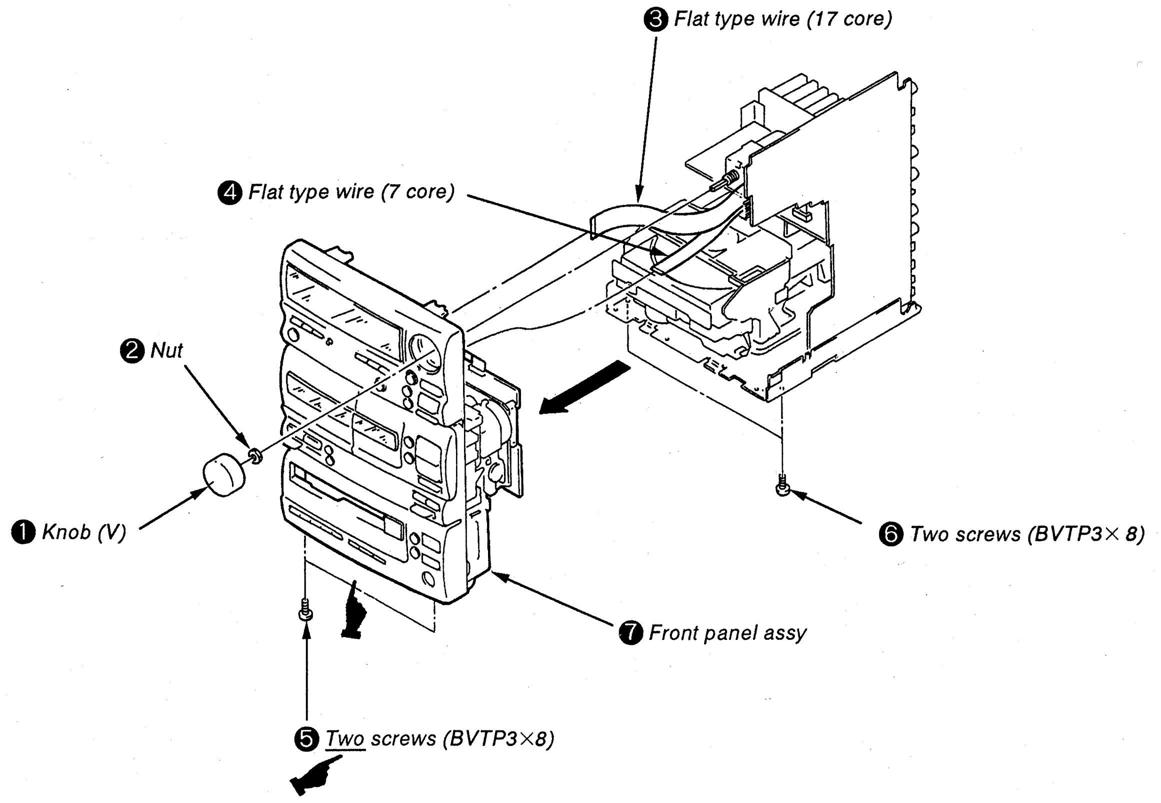
R-CH is omitted : Same as L-CH


CA, AEP, UK, G, IT, EE MODEL
MIX/FILTER IC605
MAIN/SUB SELECT IC603
KARAOKE PON SWITCH D551, 552 Q638, 688
E, EA, AUS, MY, SP, MX MODEL
D216 KARAOKE PON
S-SUR
SURROUND SWITCH Q731
CA, AEP, UK, G, IT, EE MODEL
SWITCH Q702
GRAPHIC EQUALIZER IC701
RESISTOR NETWORK & ANALOG SWITCH
ELETRICAL VOLUME IC731
MUTE DRIVE Q599
MUTE DRIVE Q503
MUTING Q639
MUTING Q701
J602 LINE OUT
RV701 VOLUME
POWER AMP IC801
OVERLOAD DET Q801
PROTECT SWITCH Q871
PROTECTOR IC802
OFF SET
OVERLOAD
VCC MUTE
RY801
J151 HEADPHONES
TM801 SPEAKER
J801 SURROUND SPEAKER
E, AUS, EA, MY, SP, MX MODEL
D503
D504
D214 MAIN
D215 SUB
D501
D502
EXPANDER, LED DRIVE IC502
VIDEO
MUTE
CD OFF
POWER
DATA
CLOCK
SPECTRUM ANALYZER FREQUENCY SELECT IC205
COM-1
COM-2
SPECTRUM ANALYZER IC201
10kHz
4kHz
1kHz
250Hz
63Hz
D3007-3009 D3011, 3012 D3501, 3502
LED
VOLTAGE DET IC203
BACK-UP Q201
REG/RESET IC502
B+ (5V) (CD SECTION)
V OUT
V IN
EN
RESET
KEY IN
BACK-UP
D204
RESET Q202, 203
FL DRIVE, KEY CONTROL, MAIN SYSTEM CONTROL IC201
IG-I16
P1-P23
FL GRID DRIVE Q205, 206
FL201 FLUORESCENT INDICATOR TUBE
LED DRIVE
POWER ON/OFF Q501
AUDIO BUS BUFFER Q302, 308
AUDIO BUS BUFFER Q407
D303
TC SYSTEM CONTROL IC301
X301 4MHz
CAPSTAN MOTOR DRIVE Q412
SPEED CONTROL Q71A
SPEED CONTROL Q71B
CAPSTAN MOTOR HI/NOR Q311, 312
CAPSTAN MOTOR DRIVE Q413
CN302 (TEST MODE)
M102A CAPSTAN MOTOR
M102B CAPSTAN MOTOR
D401
D402
RESET IC302
D704
REEL MOTOR DRIVE IC402
M101A REEL MOTOR
M101B REEL MOTOR
S3025 DIRECTION
REFLAY
S81B (STOP)
S86B (HALF)
S85 (SIDE B)
S84 (SIDE A)
ROTATION DET IC81B
ROTATION DET IC81A
S81A (STOP)
S86A (HALF)
X2
SIRCS
XT1
XT2
LOW
HIGH
VOL+
VOL-
VOLUM MOTOR CONTROL IC2000
VOL MOTOR
CF201 .19MHz
X201 32.768kHz
REMOTE CONTROL RECEIVER IC204
D219 DBS-LOW
D217 DBS-HIGH
REC/PB, EQ AMP, AMS, DOLBY AMP IC401 (1/2)
RV11A (PB LEVEL)
RV11B (PB LEVEL)
A IN
B IN
DOLBY NR
S3028 DOLBY NR
OFF
ON
MUTING Q401
D499
D498
LINE MUTE DRIVE Q301
EQ
LPF
AMS BUFFER Q304
REC/PB SELECT Q305
DECK A/B SELECT Q306
DUBBING SPEED Q303
D3010 HIGH SPEED DUBBING
REC/PB SELECT SWITCH IC318
REC EQ
RV401 (REC LEVEL)
REC OUT
BIAS SWITCH IC401 (2/2)
REC BIAS ON/OFF Q53
REC BIAS CONTROL Q411
BIAS ON/OFF SWITCH Q307
BIAS OSC Q51, 52
S82A 70U EQ (DECK-A)
S82B 70U EQ (DECK-B)
PWIN
AUB-OUT
AU-BUS
A-BUS
X IN
X OUT
LM-ON/OFF
AMS IN
PASS
REC/PB
SEL A/B
DUB-H
RM ON/OFF
RELAY ON/OFF
BIAS ON/OFF
A STOP
A HALF
A SHUT
AP/BSCH
A.CM
TEST
H/L
B-CM
RESET
ARM 3
ARM 1
ARM 2
BRM 3
BRM 1
BRM 2
KEY-X
KEY-Y
B STOP
B-HALF
B SHUT
BS/ASCH
MUTE SWITCH Q909
+5.6V REG Q907
+7.5V REG Q902, 903
VOLTAGE CONSTANT IC901
-7.5V REG Q904, 905
POWER ON/OFF Q901
D909
RECT D903-906
D902
D901
AC DET Q908
+12V REG Q906
RECT D951
-24V REG Q910
B+ (13V)
B+ (5.6V)
B+ (7.5V)
B- (-7.5V)
B- (-13V)
B+ (12V) (TUNER SECTION)
B+ (33.7V)
B- (-33.7V)
B- (-24V)
VF
PT951 POWER TRANSFORMER
CA, AEP, UP, UK, IT, EE, G, AUS MODEL
VOLTAGE SELECTOR S951
E, EA, MY, SP, MX MODEL
AC IN
R-CH

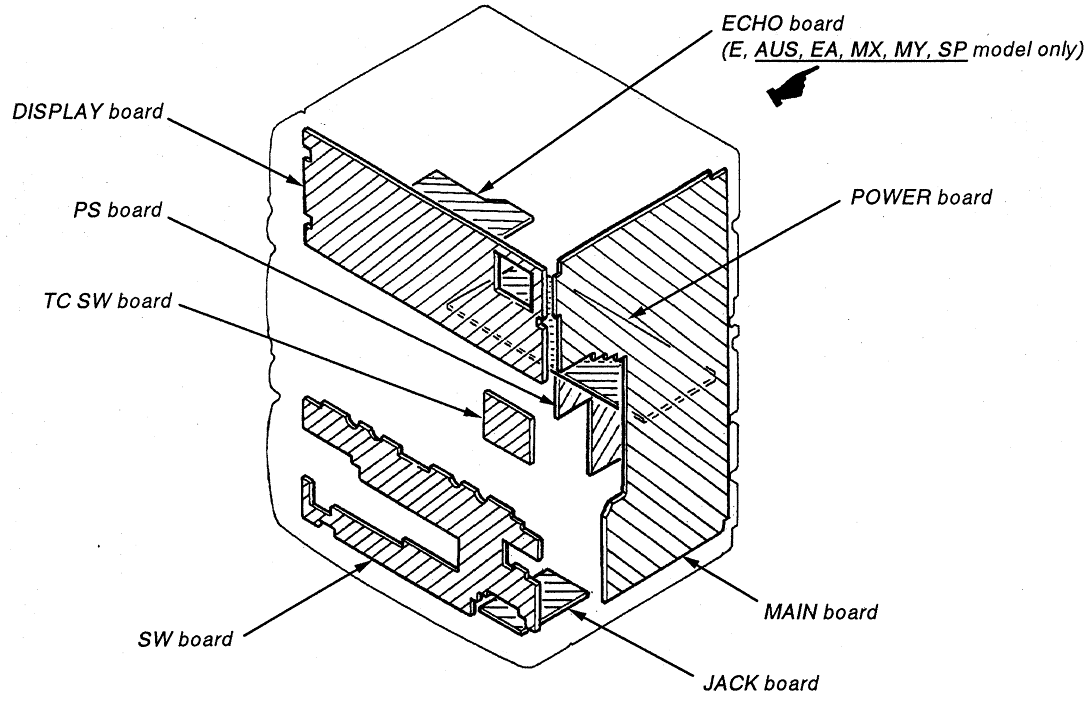
CORRECTION

☛ : corrected portion

2-3. FRONT PANEL REMOVAL (Service Manual See page 6)

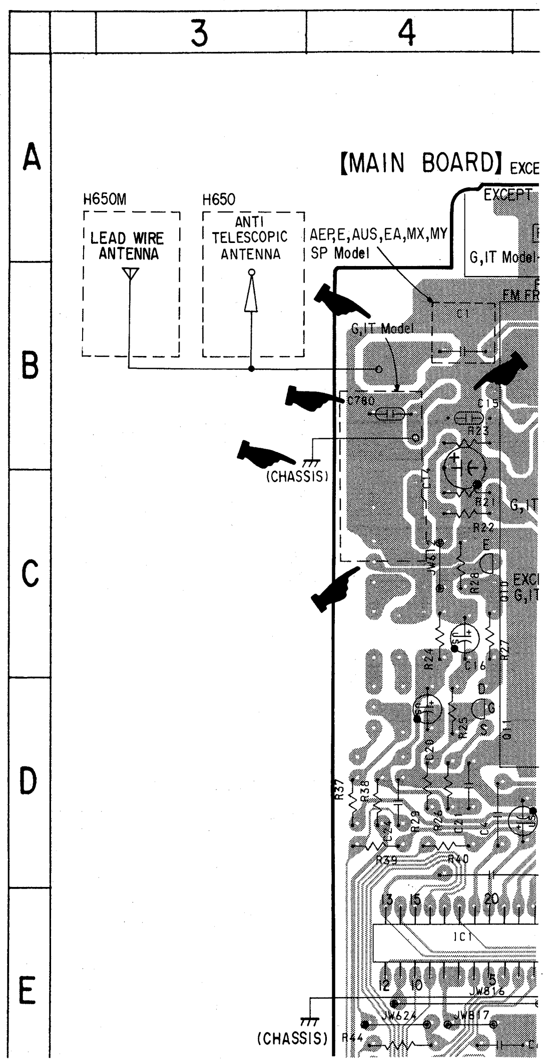

❸ Flat type wire (17 core)
❹ Flat type wire (7 core)
❷ Nut
❶ Knob (V)
❻ Two screws (BVTP3× 8)
❼ Front panel assy
❺ Two screws (BVTP3×8)

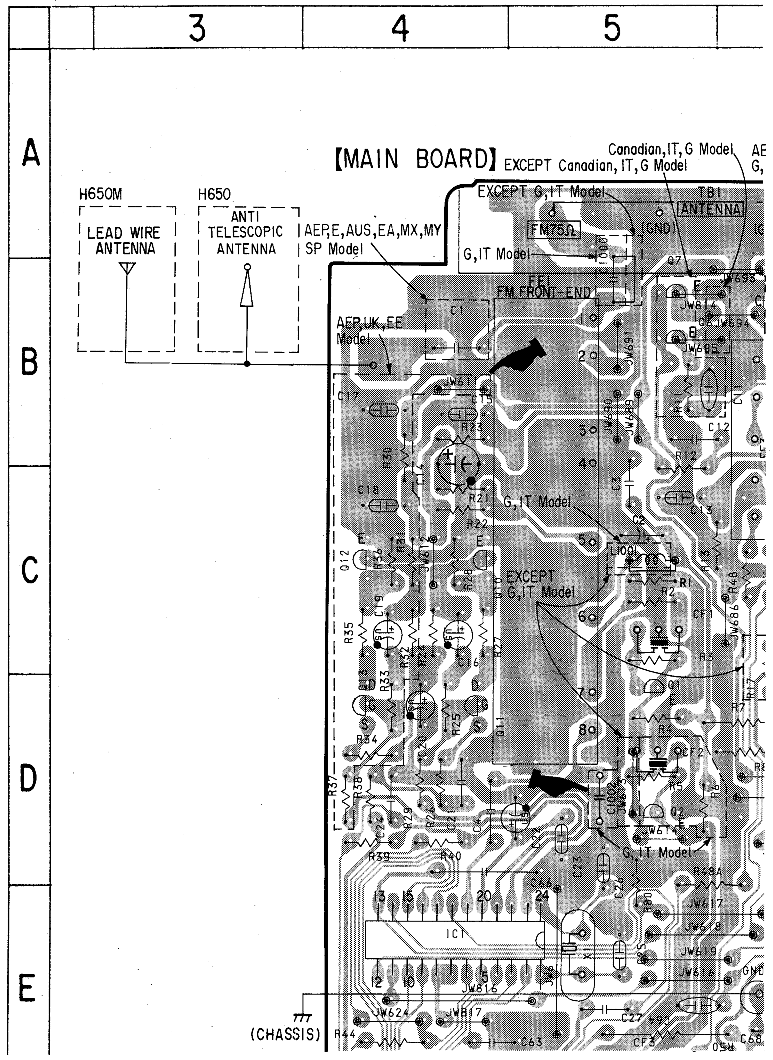
4-1. CIRCUIT BOARD LOCATION (Service Manual See page 15)


ECHO board
(E, AUS, EA, MX, MY, SP model only)
DISPLAY board
PS board
TC SW board
POWER board
SW board
MAIN board
JACK board

☛ : corrected portion

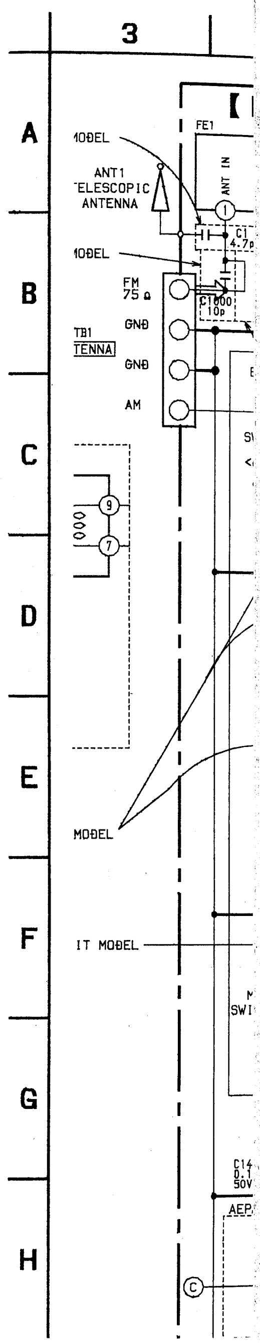
- **PRINTED WIRING BOARDS** – **MAIN SECTION** – (Service Manual See page 17)

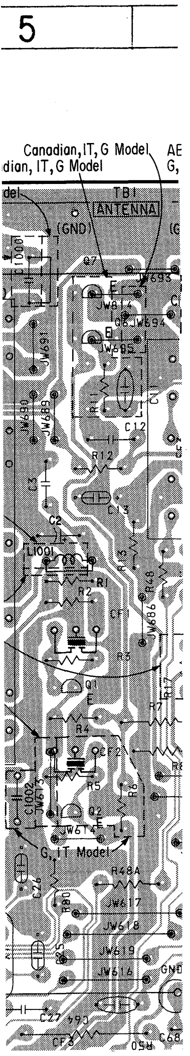

3
4
A
B
C
D
E
[MAIN BOARD] EXCE
H650M
LEAD WIRE ANTENNA
H650
ANTI TELESCOPIC ANTENNA
AEP,E,AUS,EA,MX,MY SP Model
EXCEPT
G,IT Model
FM FR
G,IT Model
C760
(CHASSIS)
C1
R23
R21
R22
R24
R27
EXC G,IT
R37
R39
R40
IC1
JW624
JW817
JW816
R44
(CHASSIS)


3
4
5
A
B
C
D
E
[MAIN BOARD] EXCEPT Canadian, IT, G Model
Canadian, IT, G Model
EXCEPT G,IT Model
TB1
ANTENNA
FM75Ω
GND
H650M
LEAD WIRE ANTENNA
H650
ANTI TELESCOPIC ANTENNA
AEP,E,AUS,EA,MX,MY SP Model
G,IT Model
FE1
FM FRONT-END
AEP,UK,EE Model
C1
C17
C18
R23
R21
R30
G,IT Model
EXCEPT G,IT Model
Q7
Q1
Q2
R35
R37
R39
R40
IC1
G,IT Model
JW624
JW817
JW816
JW617
JW618
JW619
JW616
R44
(CHASSIS)
C27
C63

☛ : corrected port

- **SCHEMATIC DIAGR**

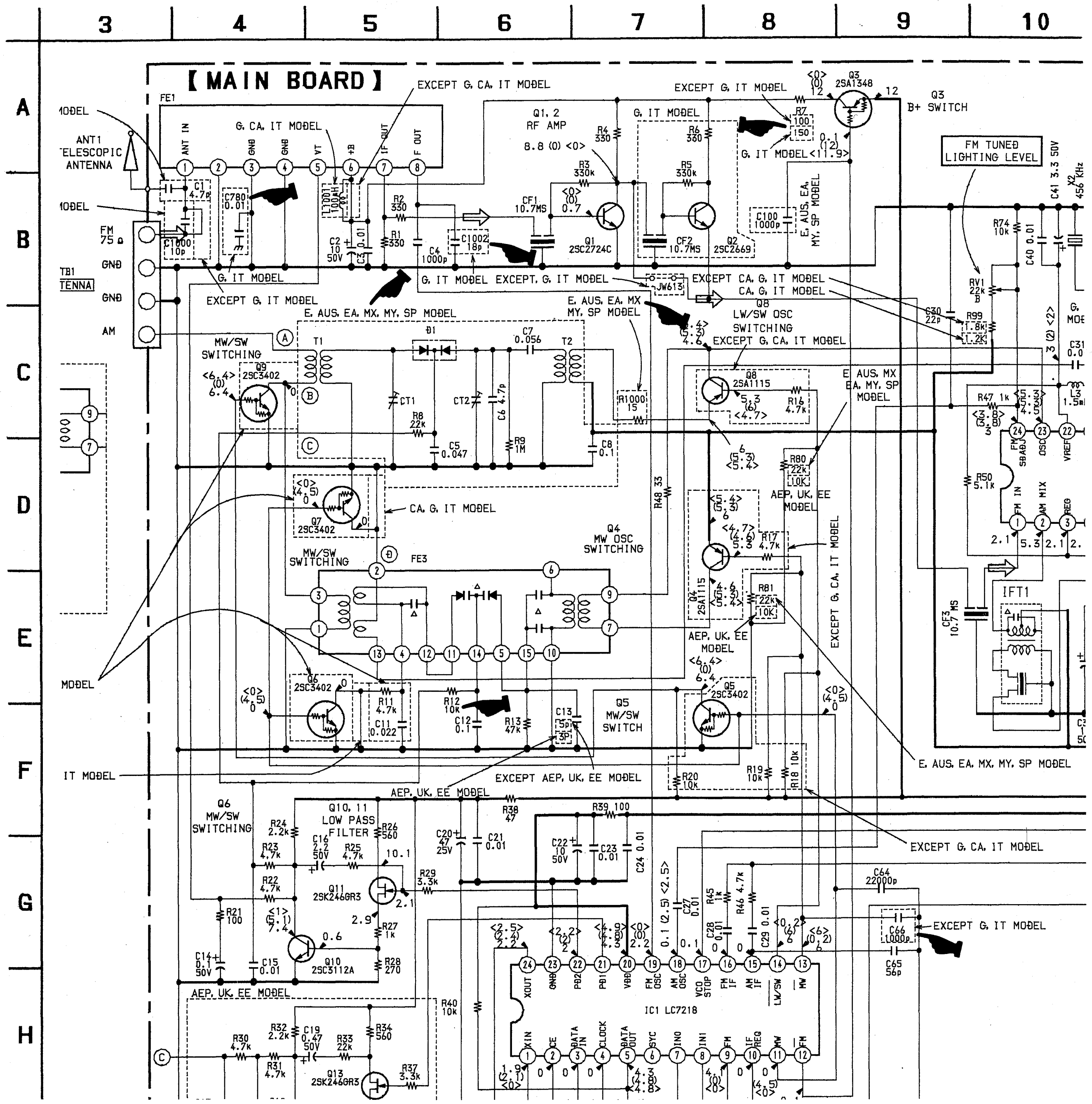

3
A
B
C
D
E
F
G
H
FE1
MODEL
ANT1
TELESCOPIC ANTENNA
MODEL
FM 75Ω
GND
GND
AM
TB1
ANTENNA
C1600
MODEL
IT MODEL
C14
50V



5
Canadian, IT, G Model
dian, IT, G Model
ANTENNA
GND
G, IT Model

☛ : corrected portion

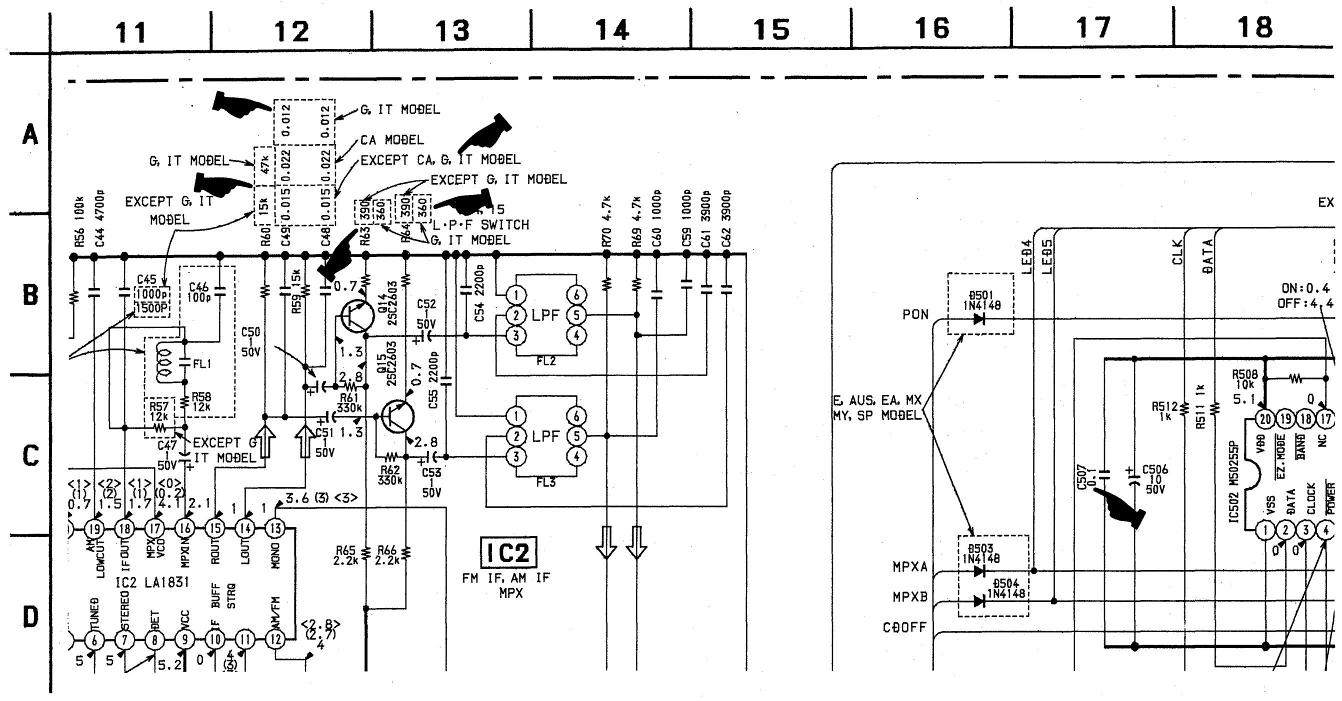
• SCHEMATIC DIAGRAM – MAIN SECTION – (Service Manual See page 19, 20)



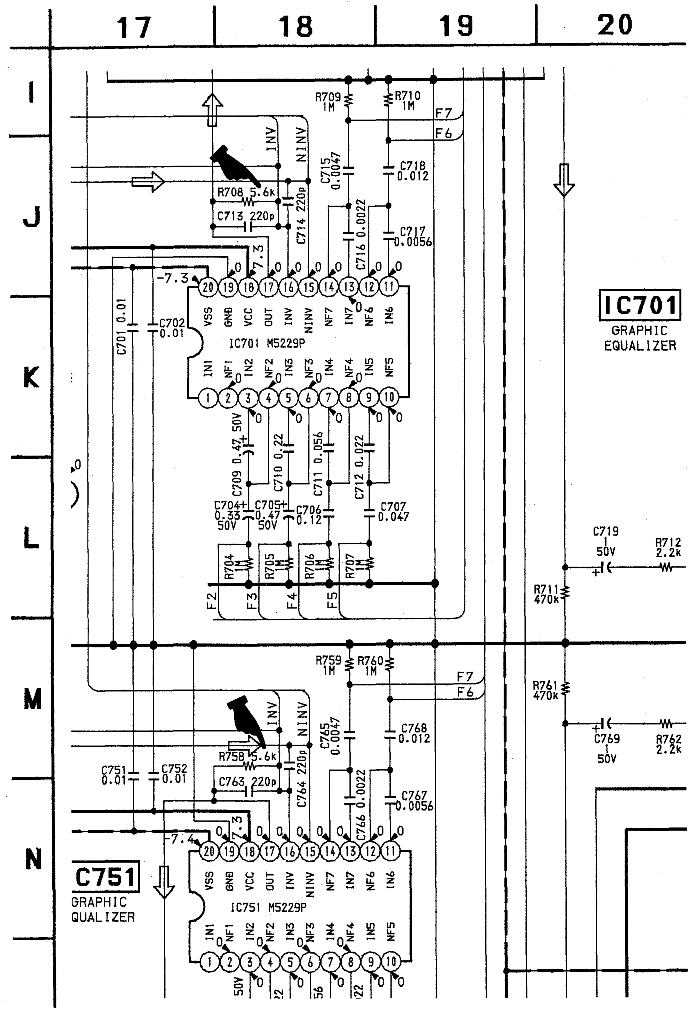
3
4
5
6
7
8
9
10
A
B
C
D
E
F
G
H
[MAIN BOARD]
FE1
EXCEPT G, CA, IT MODEL
EXCEPT G, IT MODEL
Q3 2SA1348
Q3 B+ SWITCH
ANT1 TELESCOPIC ANTENNA
TB1 ANTENNA
FM 75Ω
GND
AM
G, CA, IT MODEL
Q1, 2 RF AMP
Q1 2SC2724C
Q2 2SC2669
CF1 10.7MS
CF2 10.7MS
G, IT MODEL
FM TUNED LIGHTING LEVEL
X2 456 kHz
RV1 22k
E, AUS, EA, MX, MY, SP MODEL
Q8 LW/SW OSC SWITCHING
EXCEPT CA, G, IT MODEL
Q9 2SC3402
MW/SW SWITCHING
Q7 2SC3402
CA, G, IT MODEL
Q4 MW OSC SWITCHING
FE3
IFT1
AEP, UK, EE MODEL
Q6 2SC3402
Q5 2SC3402
Q5 MW/SW SWITCH
IT MODEL
MODEL
EXCEPT AEP, UK, EE MODEL
E, AUS, EA, MX, MY, SP MODEL
Q6 MW/SW SWITCHING
Q10, 11 LOW PASS FILTER
Q11 2SK2460R3
Q10 2SC3112A
Q13 2SK2460R3
IC1 LC7218
EXCEPT G, CA, IT MODEL
EXCEPT G, IT MODEL
EXCEPT G, CA, IT MODEL

☛ : corrected portion

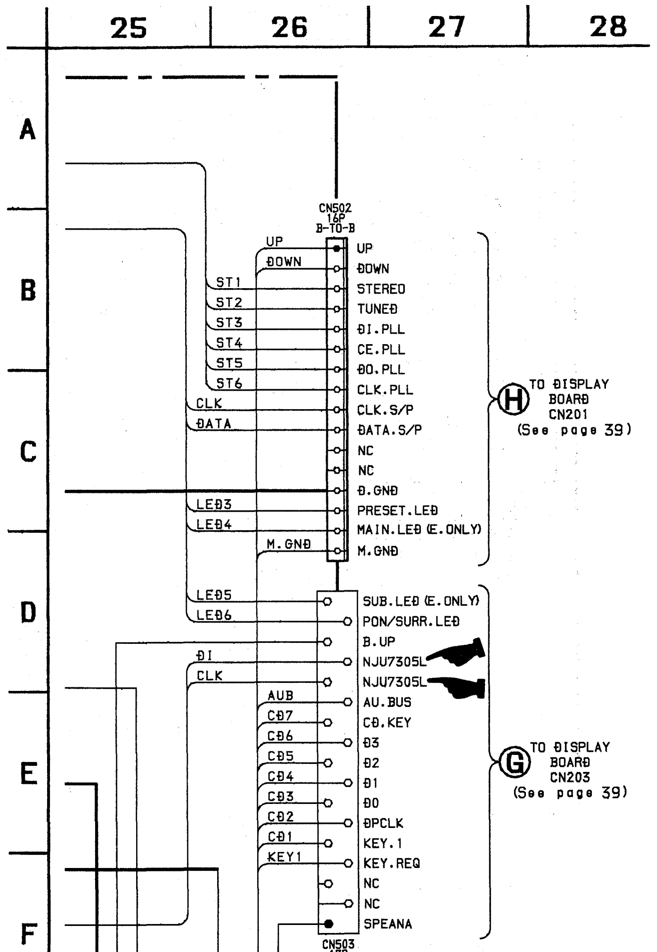
• SCHEMATIC DIAGRAM – MAIN SECTION – (Service Manual See page 20 – 22)



11
12
13
14
15
16
17
18
A
B
C
D
G, IT MODEL
CA MODEL
EXCEPT CA, G, IT MODEL
EXCEPT G, IT MODEL
Q15 L·P·F SWITCH
Q14 2SC2603
Q15 2SC2603
FL1
LPF
FL2
FL3
IC2 LA1831
IC2 FM IF, AM IF MPX
PON
D501 1N4148
E, AUS, EA, MX, MY, SP MODEL
MPXA
MPXB
CEOFF
D503 1N4148
D504 1N4148
IC502 M50255P
ON:0.4 OFF:4.4



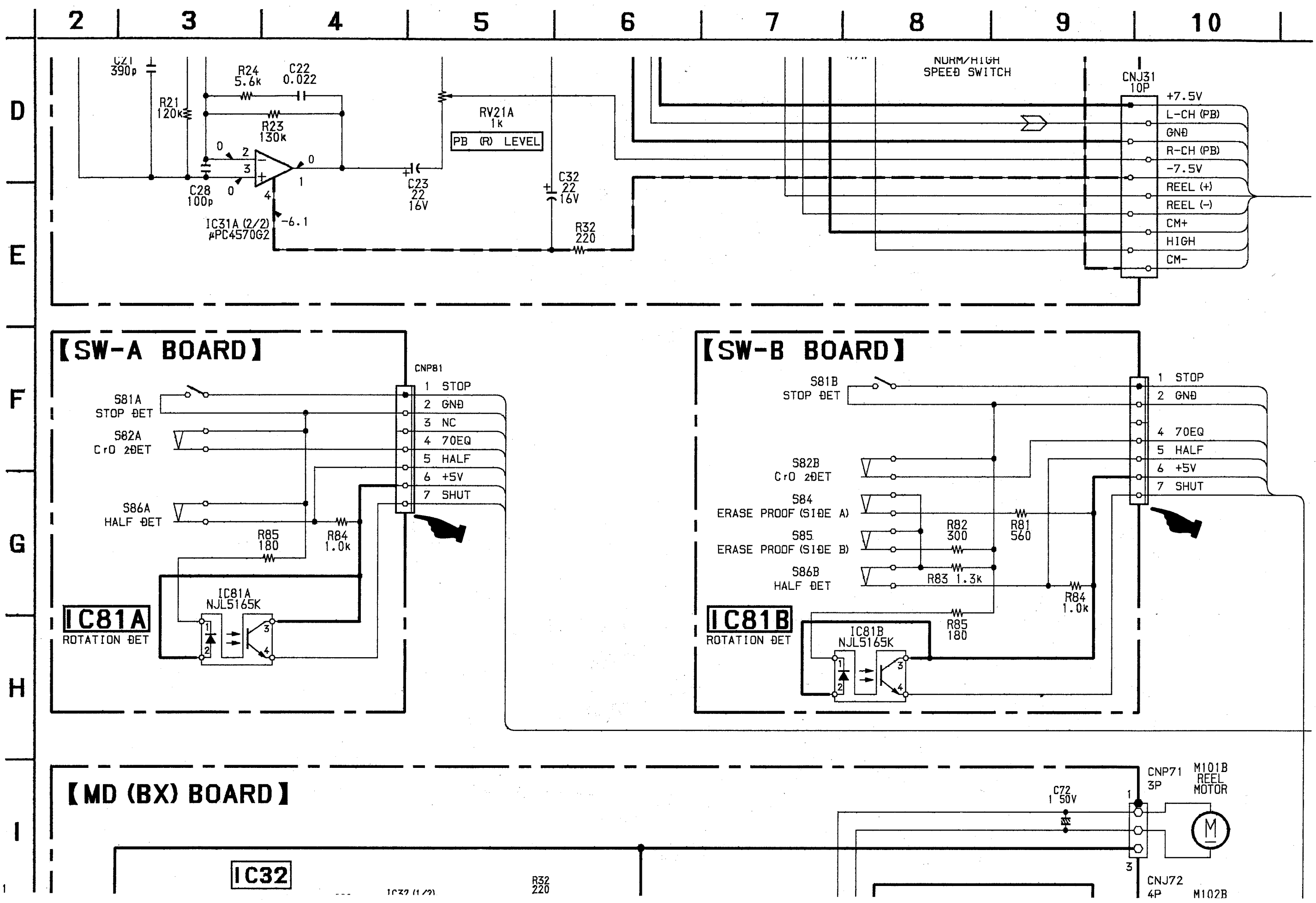
17
18
19
20
I
J
K
L
M
N
IC701
IC701 GRAPHIC EQUALIZER
IC701 M5229P
IC751 M5229P
C751 GRAPHIC QUALIZER



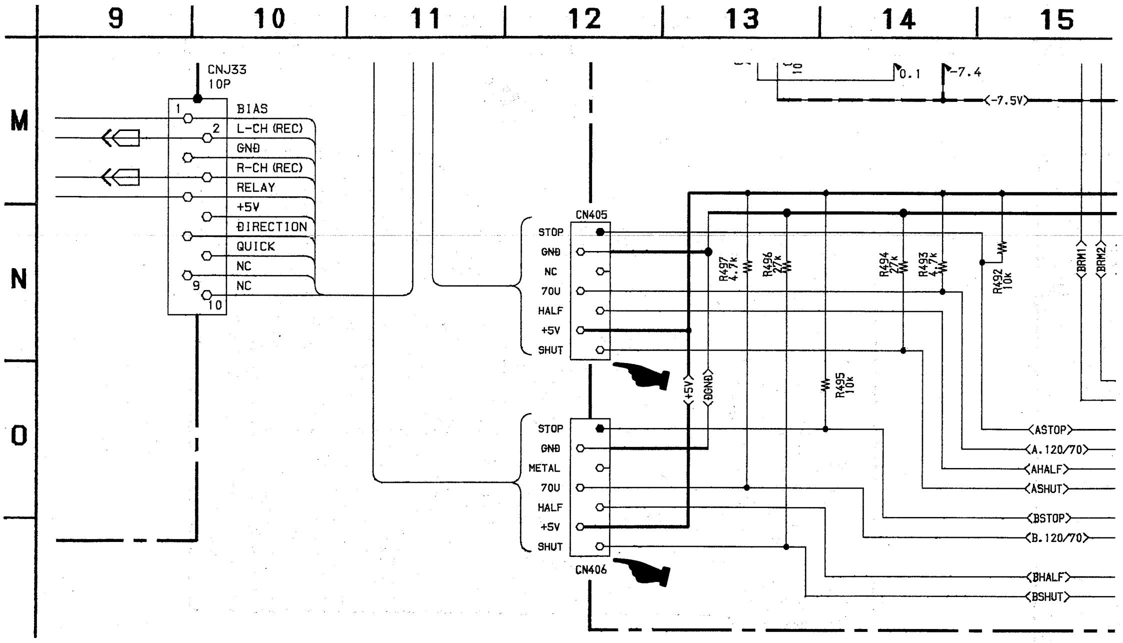
25
26
27
28
A
B
C
D
E
F
CN502 16P B-TO-B
UP
DOWN
STEREO
TUNED
DI.PLL
CE.PLL
DO.PLL
CLK.PLL
CLK.S/P
DATA.S/P
NC
D.GND
PRESET.LED
MAIN.LED (E.ONLY)
M.GND
TO DISPLAY BOARD CN201 (See page 39)
SUB.LED (E.ONLY)
PON/SURR.LED
B.UP
NJU7305L
AU.BUS
CD.KEY
D3
D2
D1
D0
DPCLK
KEY.1
KEY.REQ
SPEANA
CN503 17P FFC
TO DISPLAY BOARD CN203 (See page 39)

☛ : corrected portion

- **SCHEMATIC DIAGRAM – DECK SECTION** – (Service Manual See page 24, 25)



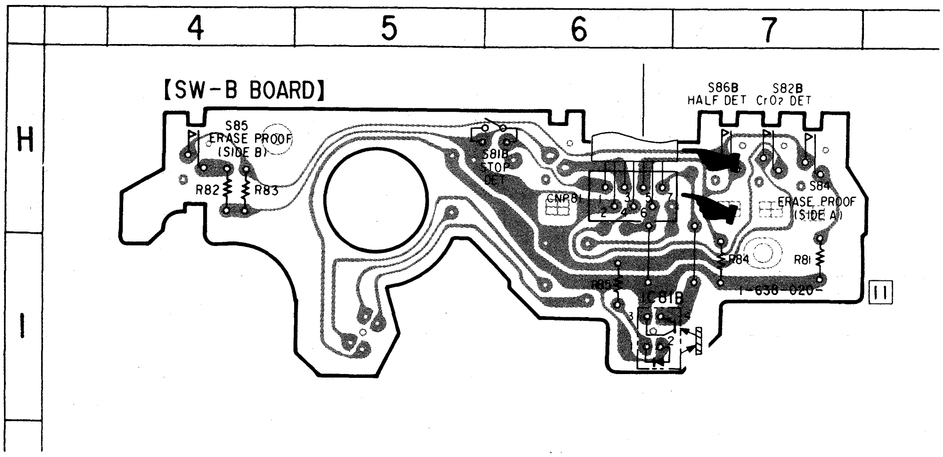
2
3
4
5
6
7
8
9
10
D
E
F
G
H
I
C21 390p
R24 5.6k
C22 0.022
R21 120k
R23 130k
C28 100p
IC31A (2/2) µPC4570G2
-6.1
RV21A 1k
PB (R) LEVEL
C23 22 16V
C32 22 16V
R32 220
NORM/HIGH SPEED SWITCH
CNJ31 10P
+7.5V
L-CH (PB)
GND
R-CH (PB)
-7.5V
REEL (+)
REEL (-)
CM+
HIGH
CM-
【SW-A BOARD】
CNP81
1 STOP
2 GND
3 NC
4 70EQ
5 HALF
6 +5V
7 SHUT
S81A STOP DET
S82A CrO2 DET
S86A HALF DET
R85 180
R84 1.0k
IC81A NJL5165K
IC81A
ROTATION DET
【SW-B BOARD】
1 STOP
2 GND
4 70EQ
5 HALF
6 +5V
7 SHUT
S81B STOP DET
S82B CrO2 DET
S84 ERASE PROOF (SIDE A)
S85 ERASE PROOF (SIDE B)
S86B HALF DET
R82 300
R81 560
R83 1.3k
R84 1.0k
R85 180
IC81B NJL5165K
IC81B
ROTATION DET
【MD (BX) BOARD】
C72 1 50V
CNP71 3P
M101B REEL MOTOR
IC32
R32 220
CNJ72 4P
M102B

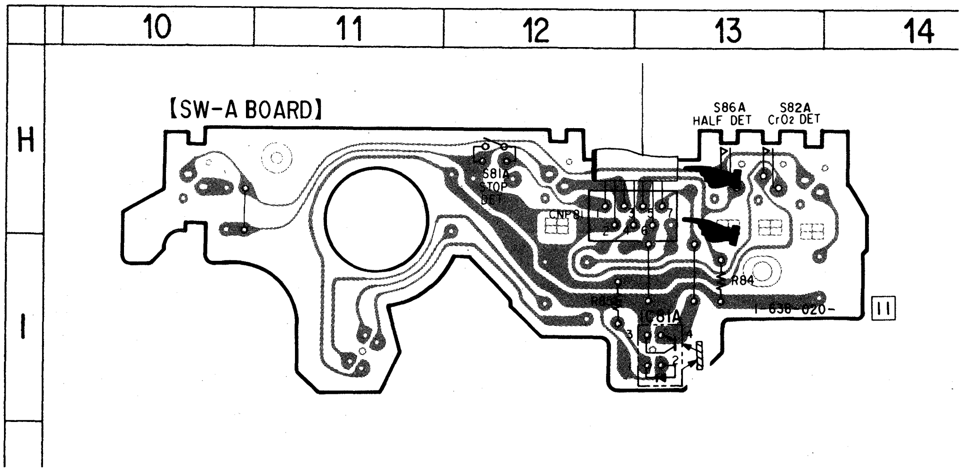


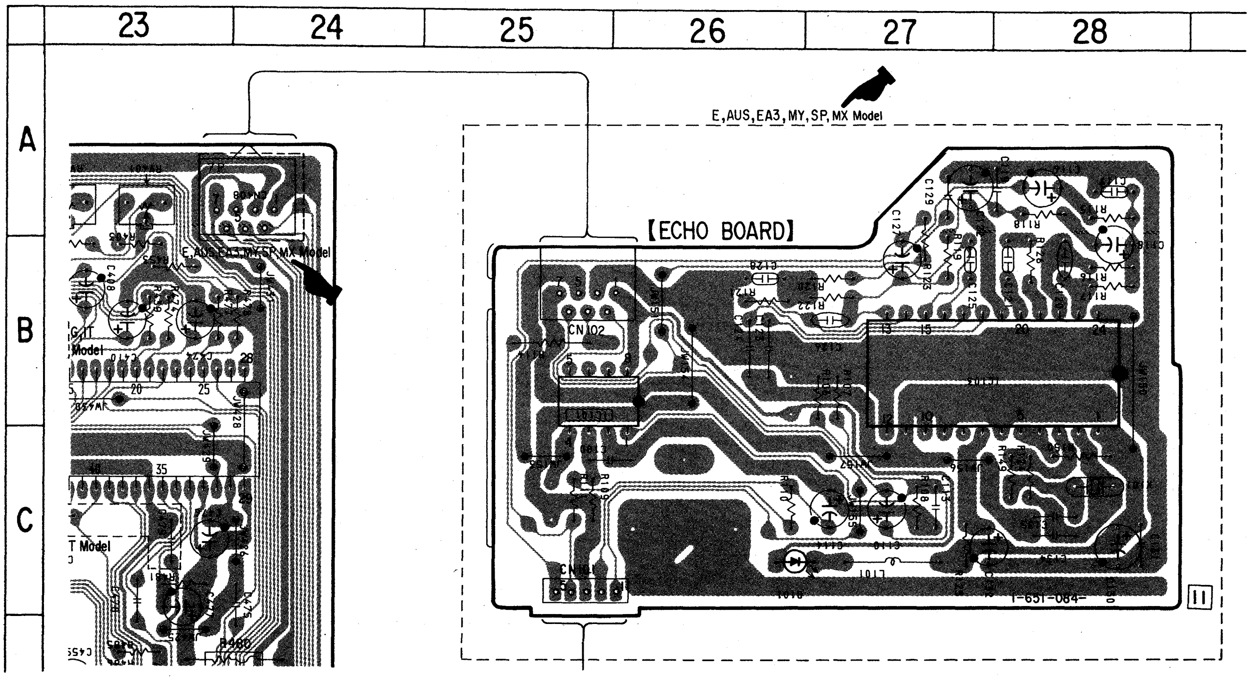
9
10
11
12
13
14
15
M
N
O
CNJ33 10P
BIAS
L-CH (REC)
GND
R-CH (REC)
RELAY
+5V
DIRECTION
QUICK
NC
NC
-0.1
-7.4
-7.5V
CN405
STOP
GND
NC
70U
HALF
+5V
SHUT
R497 4.7k
R496 47k
R494 27k
R493 4.7k
R492 10k
BRM1
BRM2
+5V
DGND
R495 10k
STOP
GND
METAL
70U
HALF
+5V
SHUT
CN406
ASTOP
A.120/70
AHALF
ASHUT
BSTOP
B.120/70
BHALF
BSHUT

☛ : corrected portion

- **PRINTED WIRING BOARDS** – **DECK SECTION** – (Service Manual See page 29 – 32)

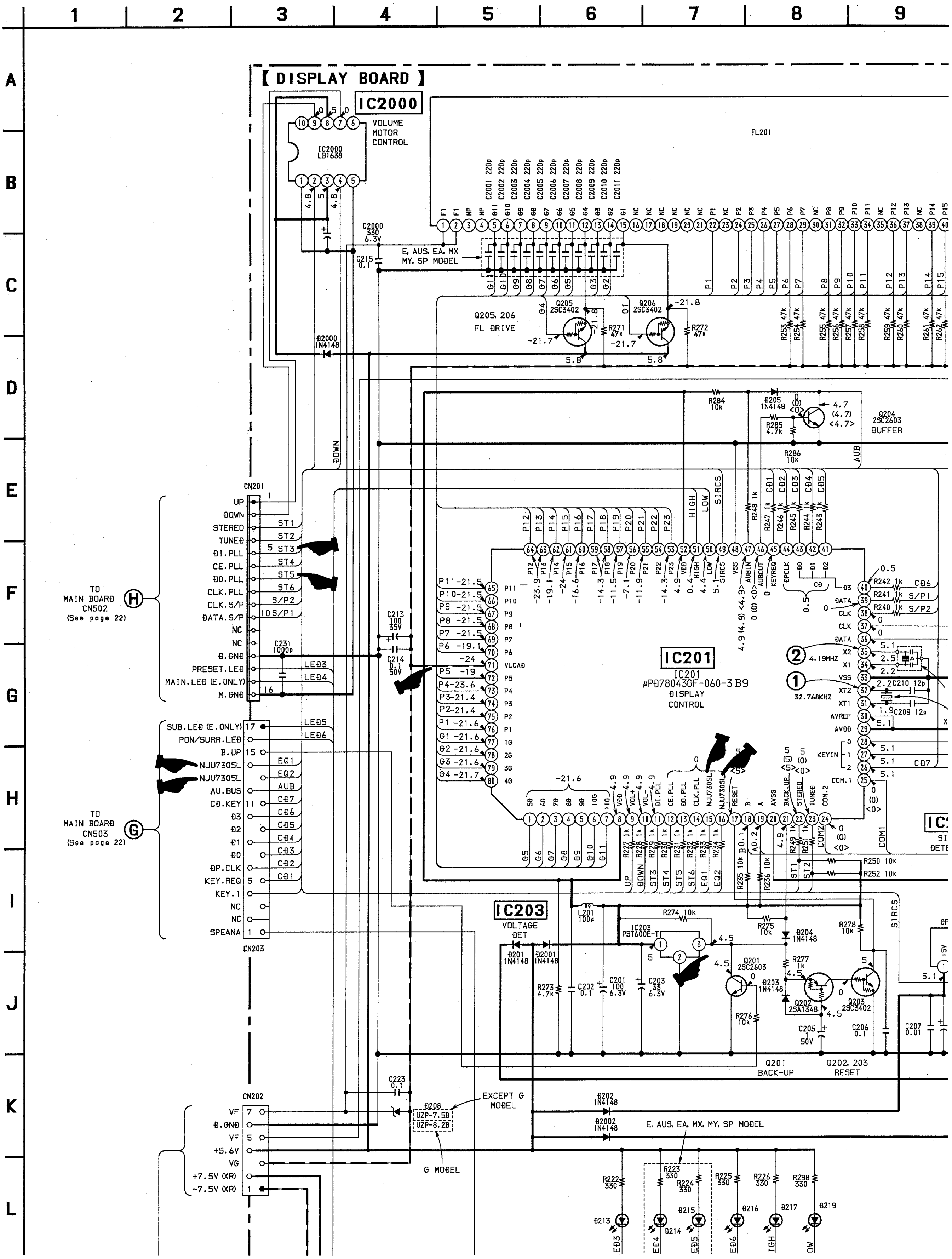

4
5
6
7
H
I
[SW-B BOARD]
S85
ERASE PROOF
(SIDE B)
R82
R83
S81B
STOP
DET
CNP81
S86B
HALF DET
S82B
CrO2 DET
S84
ERASE PROOF
(SIDE A)
R84
R81
R85
IC81B
1-638-020-
11


10
11
12
13
14
H
I
[SW-A BOARD]
S81A
STOP
DET
CNP81
S86A
HALF DET
S82A
CrO2 DET
R84
R85
IC81A
1-638-020-
11


23
24
25
26
27
28
A
B
C
E,AUS,EA3,MY,SP,MX Model
[ECHO BOARD]
E,AUS,EA3,MY,SP,MX Model
CN102
CN101
IC101
D113
L101
1-651-084-
11

☛ : corrected portion

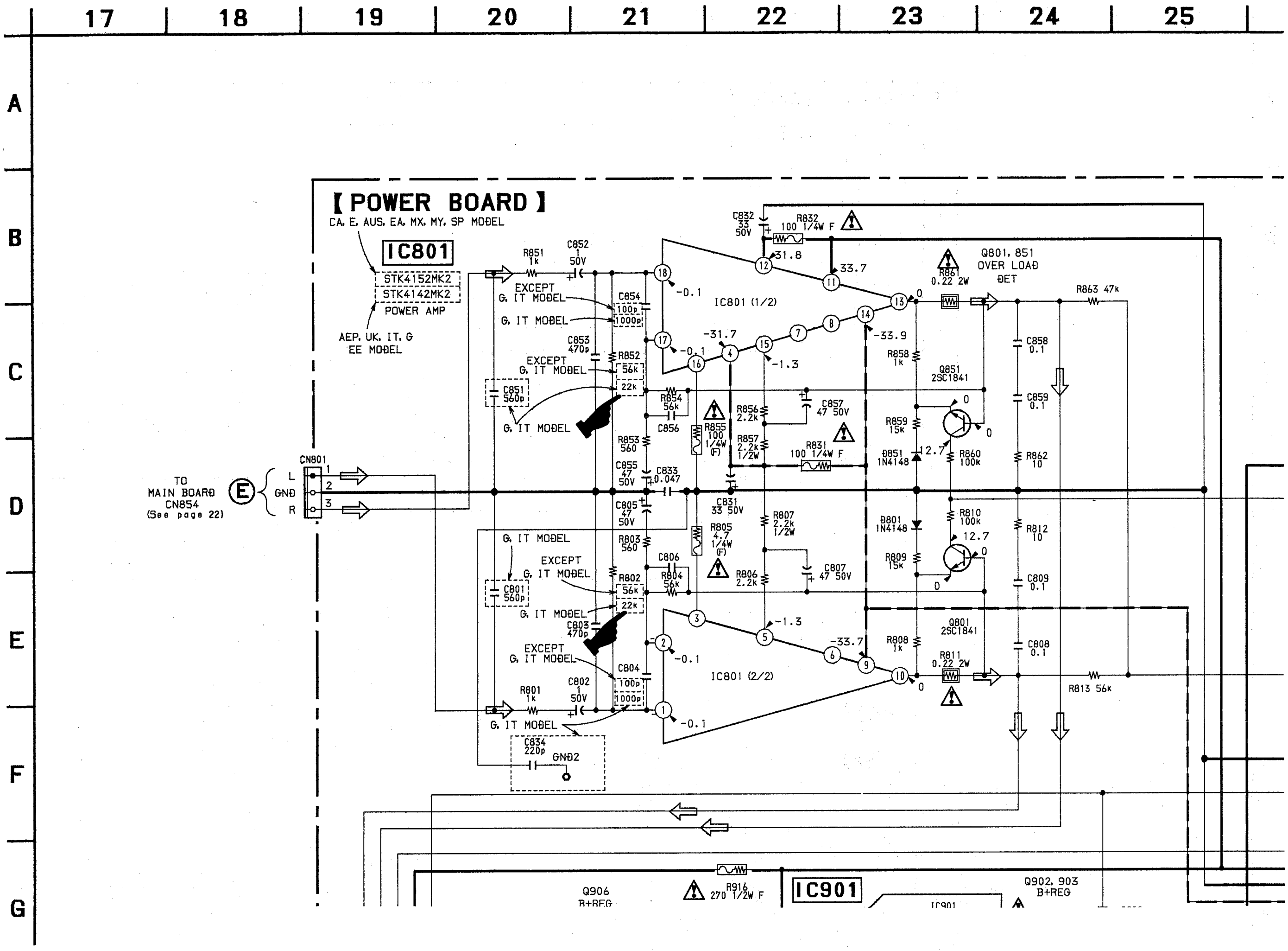
• SCHEMATIC DIAGRAM – DISPLAY SECTION – (Service Manual See page 39)



1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
G
H
I
J
K
L
DISPLAY BOARD
IC2000
VOLUME MOTOR CONTROL
IC2000 LB1638
FL201
IC201
IC201 μPD78043GF-060-3B9 DISPLAY CONTROL
IC203
VOLTAGE DET
IC203 PST600E-T
Q205, 206 FL DRIVE
Q204 2SC2603 BUFFER
Q201 BACK-UP
Q202, 203 RESET
TO MAIN BOARD CN502 (See page 22)
TO MAIN BOARD CN503 (See page 22)
CN201
CN202
CN203
E, AUS, EA, MX MY, SP MODEL
EXCEPT G MODEL
G MODEL
NJU7305L
4.19MHZ
32.768KHZ

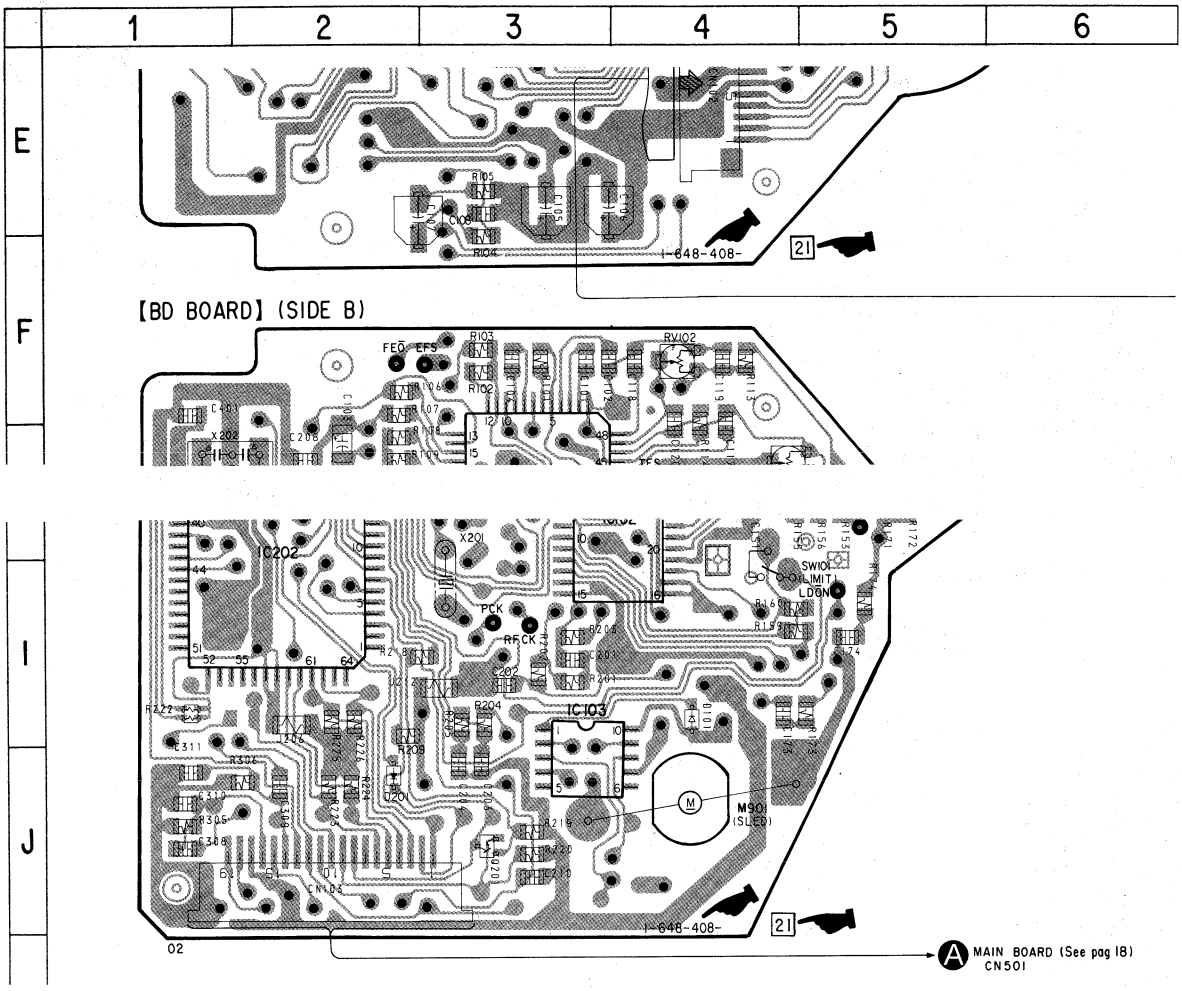
☛ : corrected portion

• SCHEMATIC DIAGRAM – DISPLAY SECTION – (Service Manual See page 41)

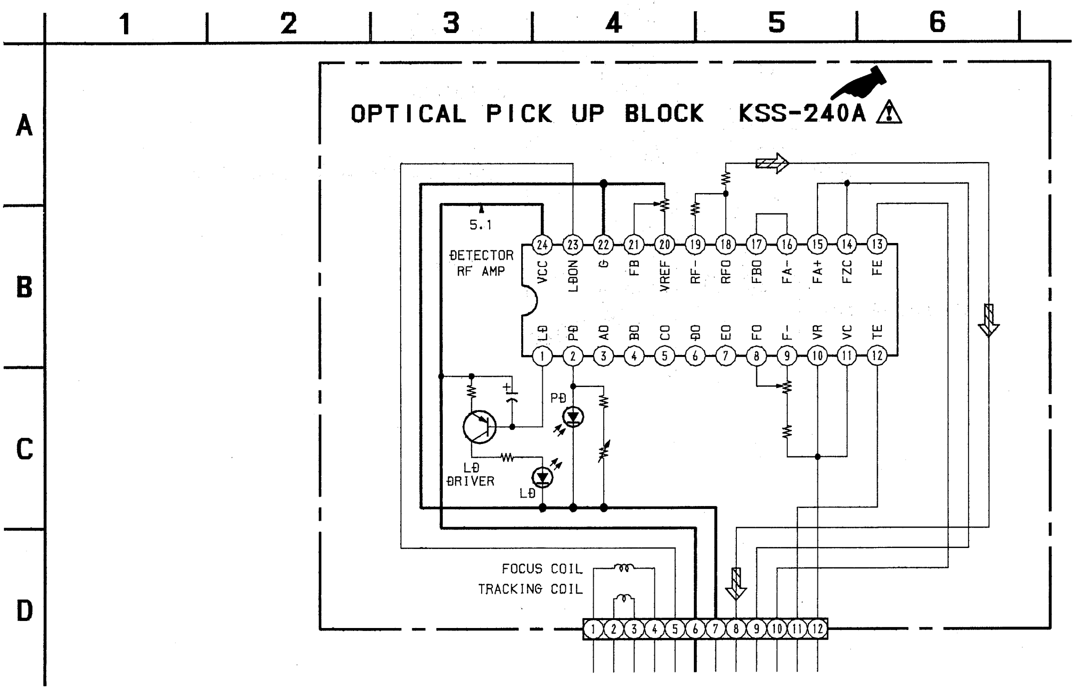

17
18
19
20
21
22
23
24
25
A
B
C
D
E
F
G
【POWER BOARD】
CA, E, AUS, EA, MX, MY, SP MODEL
IC801
STK4152MK2
STK4142MK2
POWER AMP
AEP, UK, IT, G
EE MODEL
TO
MAIN BOARD
CN854
(See page 22)
E
CN801
L
GND
R
1
2
3
R851
1k
C852
1
50V
EXCEPT
G, IT MODEL
G, IT MODEL
C854
100p
1000p
C853
470p
R852
56k
22k
C851
560p
R854
56k
C856
R853
560
C855
47
50V
C833
0.047
C805
47
50V
R803
560
C806
R802
R804
56k
C801
560p
C803
470p
C804
100p
1000p
C802
1
50V
R801
1k
C834
220p
GND2
C832
33
50V
R832
100 1/4W F
31.8
33.7
-0.1
IC801 (1/2)
-31.7
-1.3
-33.9
R855
100
1/4W
(F)
R856
2.2k
R857
2.2k
1/2W
C857
47 50V
R831
100 1/4W F
C831
33 50V
R805
4.7
1/4W
(F)
R807
2.2k
1/2W
R806
2.2k
C807
47 50V
IC801 (2/2)
-33.7
Q801, 851
OVER LOAD
DET
R861
0.22 2W
R863 47k
R858
1k
Q851
2SC1841
R859
15k
D851
1N4148
12.7
R860
100k
C858
0.1
C859
0.1
R862
10
D801
1N4148
R810
100k
R812
10
R809
15k
C809
0.1
Q801
2SC1841
R808
1k
R811
0.22 2W
C808
0.1
R813 56k
Q906
B+REG
R916
270 1/2W F
IC901
Q902, 903
B+REG

: corrected portion

• PRINTED WIRING BOARDS – CD SECTION – (Service Manual See page 47)

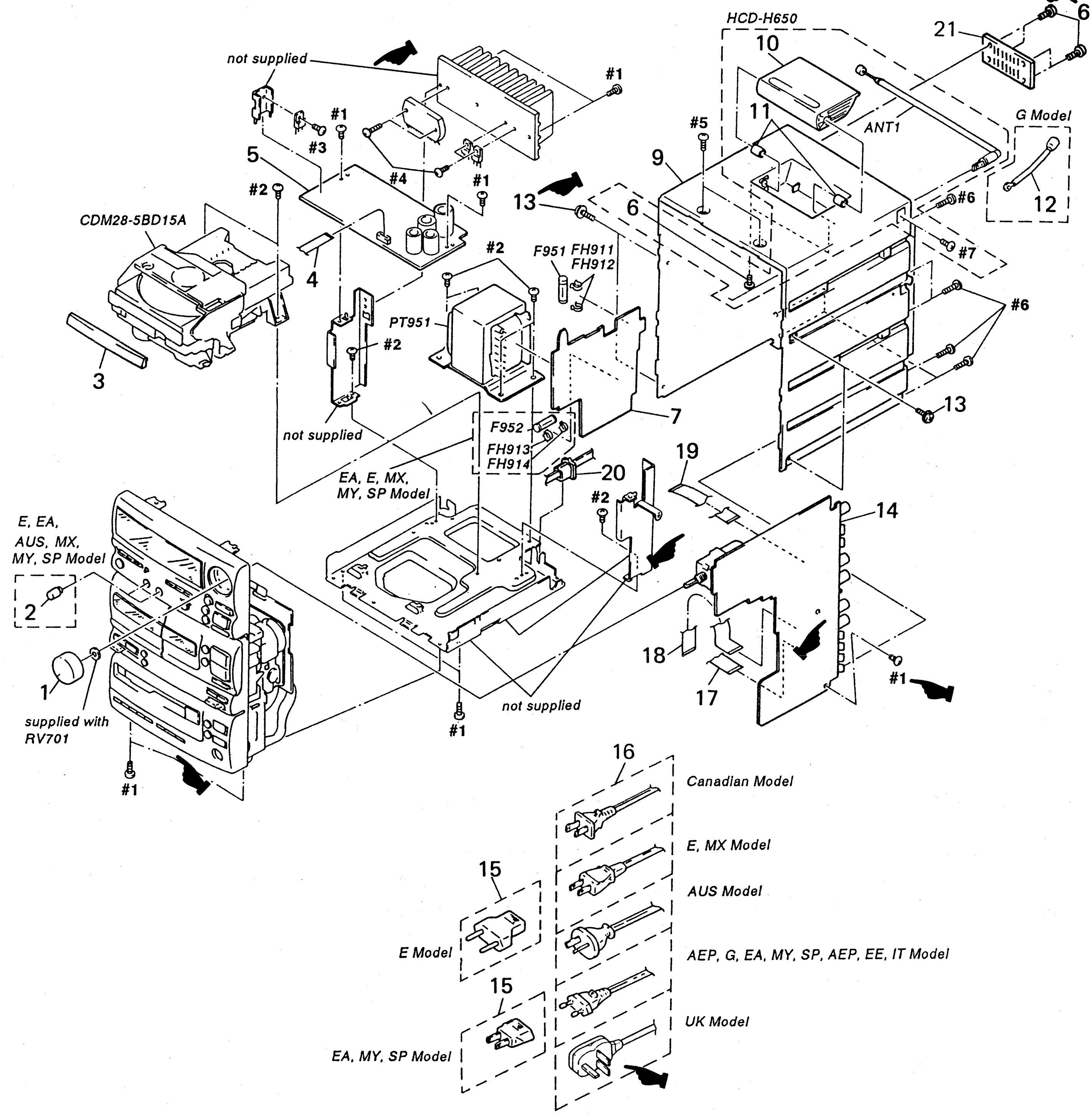

1
2
3
4
5
6
E
F
I
J
[BD BOARD] (SIDE B)
R105
C107
C108
C105
C106
R104
1-648-408-
21
FEO
EFS
R103
R102
R106
R107
R108
R109
RV102
C401
X202
C208
IC202
X201
PCK
RFCK
R208
R218
R212
C202
C201
R201
R204
R205
R209
IC103
D201
R222
C311
R306
C310
R305
C308
C309
R225
R226
R224
R223
R219
R220
C210
Q201
CN103
SW101 (LIMIT)
LDON
R160
R159
R174
D101
M901 (SLED)
1-648-408-
21
02
A
MAIN BOARD (See pag 18)
CN501

• SCHEMATIC DIAGRAM – CD SECTION – (Service Manual See page 49)


1
2
3
4
5
6
A
B
C
D
OPTICAL PICK UP BLOCK KSS-240A ⚠
5.1
DETECTOR
RF AMP
VCC
LDON
G
FB
VREF
RF-
RFO
FBO
FA-
FA+
FZC
FE
LD
PD
AD
BD
CD
DD
ED
FD
F-
VR
VC
TE
24
23
22
21
20
19
18
17
16
15
14
13
1
2
3
4
5
6
7
8
9
10
11
12
PD
LD
DRIVER
LD
FOCUS COIL
TRACKING COIL

☛ : **corrected portion**

- **EXPLODED VIEWS** (Service Manual See page 52)


HCD-H650
not supplied
#1
#3
#4
#1
#1
#2
5
4
CDM28-5BD15A
3
#2
PT951
#2
not supplied
F951 FH911
FH912
F952
FH913
FH914
EA, E, MX, MY, SP Model
13
6
7
20
#2
19
10
11
#5
9
ANT1
21
6
G Model
12
#6
#7
#6
13
14
E, EA, AUS, MX, MY, SP Model
2
1
supplied with RV701
#1
#1
not supplied
18
17
#1
16
Canadian Model
E, MX Model
AUS Model
AEP, G, EA, MY, SP, AEP, EE, IT Model
UK Model
15
E Model
15
EA, MY, SP Model

☛ : corrected portion

5-4. MECHANISM DECK SECTION-1 (Service Manual See page 56)

(DECK A : TCM-190RA12AL)

(DECK B : TCM-190RB53A)

5-5. MECHANISM DECK SECTION-2 (Service Manual See page 57)

(DECK A : TCM-190RA12AL)

(DECK B : TCM-190RB53A)

5-6. CD MECHANISM SECTION-1 (Service Manual See page 58)

(CDM28-5BD15A)

- **ELECTRICAL PARTS LIST** (Servic Manual See page 64 – 80)

INCORRECT ——→ **CORRECT**

Ref. No.	Part No.	Description	Part No.	Description	Remark
R2052 (Page 64)	1-249-429-11	CARBON 10K 5% 1/4W (G)	————		Deleted
C48 (Page 67)	1-130-485-00	MYLAR 0.015uF 5% 50V (EXCEPT Canadian)	1-130-485-00	MYLAR 0.15uF 5% 50V (EXCEPT Canadian, G, IT)	Changed
C48 (Page 67)	————		1-130-489-00	MYLAR 0.012uF 5% 50V (G, IT)	Added
C49 (Page 67)	1-130-485-00	MYLAR 0.15uF 5% 50V (EXCEPT Canadian)	1-130-485-00	MYLAR 0.15uF 5% 50V (EXCEPT Canadian, G, IT)	Changed
C49 (Page 67)	————		1-130-489-00	MYLAR 0.012uF 5% 50V (G, IT)	Added
C66 (Page 67)	1-162-294-31	CERAMIC 0.001uF 10% 50V	1-162-294-31	CERMIC 0.001uF 10% 50V (EXCEPT G, IT)	Changed
C507 (Page 67)	1-161-379-00	CERAMIC 0.01uF 20% 25V	1-164-159-11	CERAMIC 0.1uF 20% 50V	Changed
C1002 (Page 68)	————		1-162-205-31	CERAMIC 18PF 5% 50V (G, IT)	Added
R7 (Page 69)	1-247-807-31	CARBON 100 5% 1/4W	1-247-807-31 1-247-811-31	CARBON 100 5% 1/4W (EXCEPT G, IT) CARBON 150 5% 1/4W (G, IT)	Changed
R12 (Page 69)	1-249-437-11	CARBON 47K 5% 1/4W	1-249-429-11	CARBON 10K 5% 1/4W	Changed
R59 (Page 70)	1-249-431-11	CARBON 15K 5% 1/4W	1-249-431-11 1-249-437-11	CARBON 15K 5% 1/4W (EXCEPT G, IT) CARBON 47K 5% 1/4W (G, IT)	Changed
R60 (Page 70)	1-249-431-11	CARBON 15K 5% 1/4W	1-249-431-11 1-249-437-11	CARBON 15K 5% 1/4W (EXCEPT G, IT) CARBON 47K 5% 1/4W (G, IT)	Changed
R63 (Page 70)	1-249-412-11	CARBON 390 5% 1/4W	1-249-412-11 1-247-820-11	CARBON 390 5% 1/4W (EXCEPT G, IT) CARBON 360 5% 1/4W (G, IT)	Changed
R64 (Page 70)	1-249-412-11	CARBON 390 5% 1/4W	1-249-412-11 1-247-820-11	CARBON 390 5% 1/4W (EXCEPT G, IT) CARBON 360 5% 1/4W (G, IT)	Changed
R708 (Page 71)	1-249-427-11	CARBON 6.8K 5% 1/4W	1-249-426-11	CARBON 5.6K 5% 1/4W	Changed
R758 (Page 71)	1-249-427-11	CARBON 6.8K 5% 1/4W	1-249-426-11	CARBON 5.6K 5% 1/4W	Changed
C780 (Page 74)	————		1-161-379-00	CERAMIC 0.01uF 20% 25V (G, IT)	Added
R802 (Page 75)	1-249-438-11	CARBON 56K 5% 1/4W	1-249-433-11	CARBON 22K 5% 1/4W	Changed
R852 (Page 71)	1-249-438-11	CARBON 56K 5% 1/4W	1-249-433-11	CARBON 22K 5% 1/4W	Changed
#11 (Page 80)	7-621-255-15	SCREW +P 2X3	————		Deleted

SS-H650

SERVICE MANUAL

PHOTO : AEP Model

Canadian Model
AEP Model
UK Model
E Model
Australian Model

· This set is the speaker system in FH-B650/FH-B711/MHC-650.

SPECIFICATIONS

Speaker system	: 3way system
Speaker units	: Woofer : 13cm dia., cone type Tweeter : 5cm dia., cone type Super tweeter : 2cm dia., dome type
Enclosure	: Bass reflex
Rated impedance	: 6 ohms
Dimensions	: Approx. 175 × 285 × 240 mm (7 × 11¼ × 9½ inches)
Weight	: Approx. 2.8 kg

Design and specification subject to change without notice.

MICROFILM

SPEAKER SYSTEM

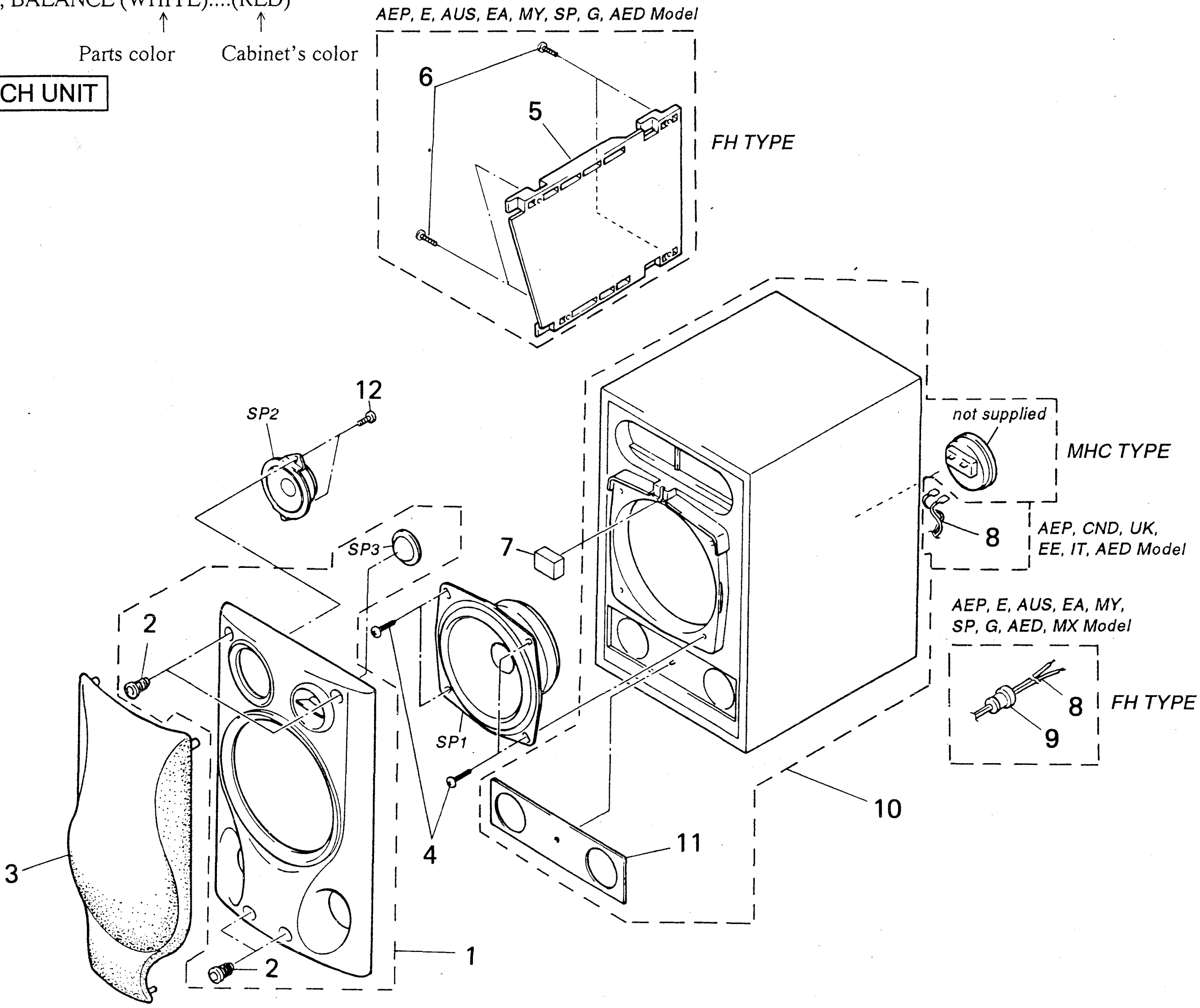
SONY®

EXPLODED VIEW AND PARTS LIST

NOTE :

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Color indication of Appearance Parts Example :
  KNOB, BALANCE (WHITE)....(RED)
  ↑ Parts color ↑ Cabinet's color
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- AED : German
  Norway
  Sweden
  Finland
  Denmark
- IT : Italian Model
  EA : Saudi Arabia Model
  G : German Model
  EE : East European Model
  CND : Canadian Model
  AUS : Australian Model
  MY : Malaysia
  SP : Singapore
  MX : Mexican

Fig : R-CH UNIT


AEP, E, AUS, EA, MY, SP, G, AED Model
6
5
FH TYPE
12
SP2
not supplied
MHC TYPE
SP3
7
8
AEP, CND, UK, EE, IT, AED Model
2
AEP, E, AUS, EA, MY, SP, G, AED, MX Model
SP1
8
FH TYPE
9
10
11
4
3
1
2

Ref. No.	Part No.	Description	Remark
1	X-4944-266-1	PANEL (L) ASSY, FRONT (BLACK)	
1	X-4944-281-1	PANEL (R) ASSY, FRONT (BLACK)	
1	X-4944-685-1	PANEL (L) ASSY, FRONT (GRAY)	
1	X-4944-686-1	PANEL (R) ASSY, FRONT (GRAY)	
2	4-951-733-01	CATCHER	
3	X-4944-265-1	FRAME ASSY GRILLE	
4	4-874-614-11	SCREW +BVTP 3X8 TYPE2 SLIT	
5	4-950-752-01	PANEL (L), SIDE (FH TYPE)	
5	4-950-753-01	PANEL (R), SIDE (FH TYPE)	
6	4-874-614-61	SCREW (4) (3.5X16), TAPPING (FH TYPE)	
7	9-911-840-XX	PACKING	
8	1-574-792-11	CORD, SPEAKER (FH TYPE)	
8	1-575-610-11	CORD, SPEAKER (MHC TYPE)	
* 9	4-965-095-01	CLIPPER, CORD (FH TYPE)	

Ref. No.	Part No.	Description	Remark
* 10	A-4353-587-A	CABINET ASSY, SPEAKER (AEP, E, EA, AUS, MY, SP, MX) (FH TYPE)	
* 10	A-4353-588-A	CABINET ASSY, SPEAKER (CND, AEP, UK, EE, IT) (MHC TYPE)	
* 10	A-4353-765-A	CABINET ASSY, SPEAKER (G, AED) (FH TYPE)	
* 10	A-4353-766-A	CABINET ASSY, SPEAKER (G, AED) (MHC TYPE)	
11	4-962-988-01	PACKING	
12	7-685-646-79	SCREW +BVTP 3X8 TYPE2 SLIT	
SP1	1-504-503-11	SPEAKER (12cm) (FH TYPE)	
SP1	1-504-452-11	SPEAKER (12cm) (MHC TYPE)	
SP2	1-504-504-11	SPEAKER (5cm) (FH TYPE)	
SP2	1-504-451-11	SPEAKER (5cm) (MHC TYPE)	
SP3	1-544-732-11	SPEAKER (2cm)	

English
94A0280-1
Printed in Japan
©1994.1
Sony Corporation
Audio Group

9-959-295-11

Published by Audio Sector Quality Assurance Dept.